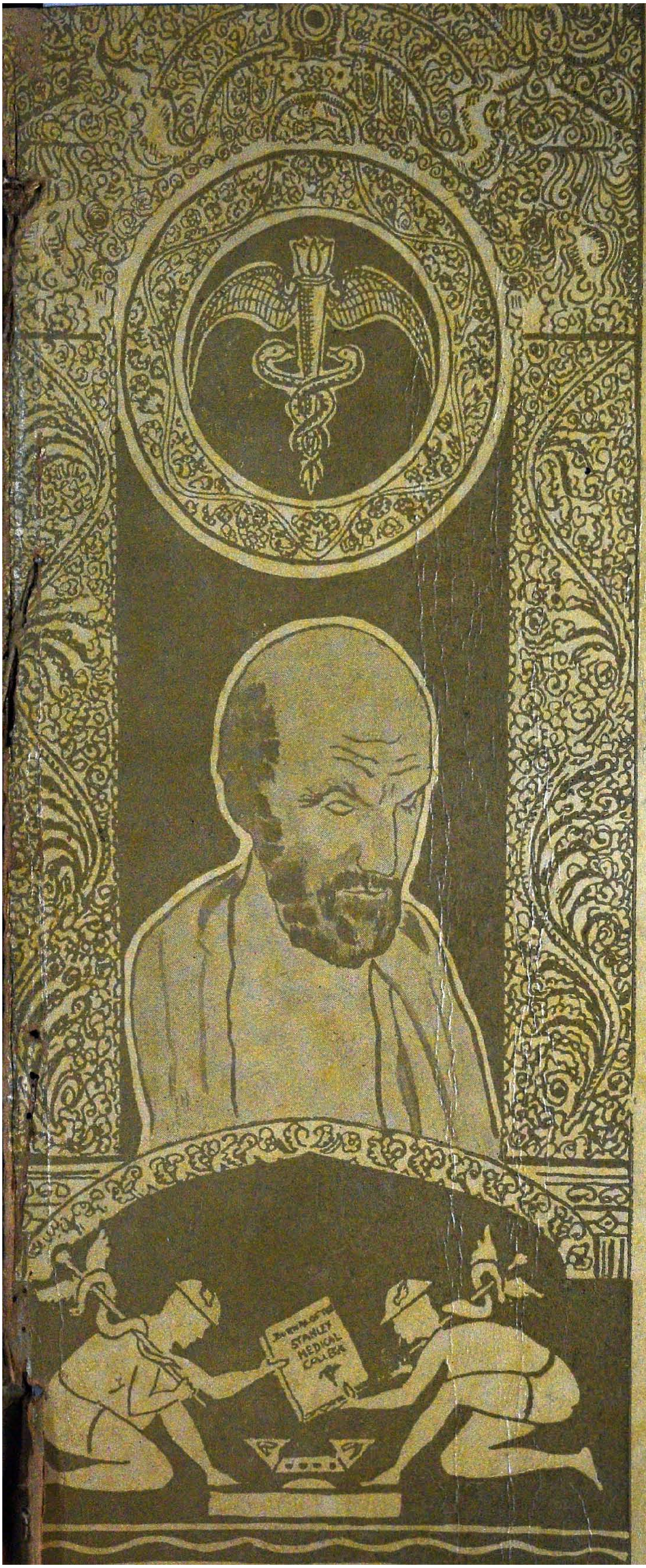

# Journal of the Stanley Medical College

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Special Symposium on

**MEDICAL EDUCATION**

VOL. XV No. 2 March 1955

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# Journal of the Stanley Medical College

Vol. XV. No. 2 March 1955

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# EDITORIAL

Winds blew, clouds canopied the earth, storms raged and left their ravages on the landmark, malignant maladies gripped and tortured the mankind under its mighty palms, dreadful epidemics scourged the whole population and took its toll on the millions; but these were all one and the same to the primitive man. These were to him the outward and visible signs of the visits of malevolent Gods, demons, spirits and super natural agencies. Thus the medical science took its origin as a mystic or a magic process designed to promote the human well being, by averting the wraths of the angered Gods and evil spirits.

And it was left for those "Men of Medicine" to untie the bondage of ignorance and save the living beings from the terrible catastrophes which would otherwise have sweeped over the mankind and exterminated the life from this earth. If the tide of time should ebb to those primitive days from the present advanced antibiotic age men will have to grope in miseries and misbelieves towards their own graves. But a handful of minds were working to get into the realities of the violent forms of the Nature; They were trying to root out the cause of the human sufferings and thus the persistant efforts of the "Great men of medicine" age after age, established one or the other truth about the human ailments and made the living possible on earth.

It was not all, who could succeed in their attempts and come to lime-light. Many had to loose their lives, probably during an experimental work and leave their achievements unfinished and unnoticed. Many a worker had to meet with repeated failures in his

attempts. Indeed whom we hear in the history of medicine are only a few of the multitudes who had all the potentialities, but never shined, probably because they were not in the way of fortune.

In fact the advancement of each age steps on the shoulders of the bygone ages. But the intuition of the true investigator and path finder of today can find his own guiding principles only from the works of yesterday. The men of old ages are by all means comparable with the men of present or future age. The value of their discoveries or inventions which may seem quite simple to a modern eye are equal to those of the present day men. For they had to work and establish their truths amidst discouragings and unqualified alarms of their contemporaries. They had to work within their dens with what sort of equipments their age could provide. Indeed those men are really great men.

This issue of our college journal which is aptly bearing a symposium on medical education, at a time when the growing criticism about the length of the medical education is epidemic in the state, we dedicate to those 'great men of medicine' who lived for the benefit of others. And the portrait of Hippocrites, 'the father of medicine' adorns the front cover of our journal.

—T. S. RANGANATHAN.

# Aims and Content of the Medical Curriculam

## (Undergraduate Medical Education)

*By*

SIR ARCOT MUDALIAR, M.D., LL.D., D.SC., F.R.C.O.G.
*Vice-Chancellor, University of Madras.*

IT is significant of the times that a symposium on under-graduate medical education should have been sponsored by the World Medical Association with the active co-operation of the World Health Organization and other international associations. Since the World Health Organization started work on an international scale in the field of prevention and cure of disease, it has become increasingly clear that the personnel of the medical profession must possess a minimum basic qualification if they are to participate effectively in the furtherance of programmes in the different countries concerned. In its preamble the World Health Organization's concept of health has been clearly defined as " a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." This implies a wider concept of undergraduate medical education than that which was accepted 30 or 40 years ago.

The objectives of medical education have undergone significant changes during this period and the duties and responsibilities of the basic doctor have widened and increased. His concern is no longer the cure of the individual patient entrusted to his care. The preventive aspects of disease have long been emphasized, and it has been suggested that during the whole period of his clinical studies the student's attention should be directed to the role of preventive medicine in the promotion of health. It must, however, be admitted that in many schools little or no real progress has been made, because to learn the fundamentals of preventive medicine one should go to the field, to the very source where the problems are being tackled. They cannot be learnt by didactic lectures or through references made during clinical demonstrations.

### MEDICINE AND SOCIETY

In recent years it has been realized that another aspect of medicine deserves increasing attention—the study of social pathology in relation to the causation and incidence of diseases and their prevention. Public health has been largely concerned with communicable diseases—their causes, distribution, and prevention ; while social medicine is concerned with all prevalent diseases which have their epidemiologies and their correlations with social and occupational conditions, and should ultimately be regarded as to a greater or less degree preventable. Social medicine is thus concerned with the pathology of families, groups, societies, or larger populations. The medical student has therefore to be familiarized not only with the pathology of the diseased condition in the patient but with those more important conditions in the home, family, and community whose prejudicial effects may have been the casual factors of the disease and may unfavourably influence smooth convalescence and recovery, if they do not actually promote its recurrence.

### CLINICAL AND PRECLINICAL STUDIES

It will therefore be seen that during the past half-century there has been a changing concept of the relation of medicine to society. It must necessarily follow that this change of concept should influence the trend of medical education and reorientate the methods pursued in undergraduate medical education. The course of undergraduate medical study is conventionally divided into two parts—the preclinical and the clinical. In the light of present-day requirements this would seem to be an artificial distinction, and the greater the degree of integration

between preclinical and clinical subjects of study the greater will be the young undergraduate's appreciation of the fundamental medical sciences and their application at a later stage of the studies.

Anatomy and physiology as basic medical sciences are undoubtedly of great importance to a proper appreciation of the clinical studies at a later stage. But to the young undergraduate in medicine the study of these subjects is of important and interest more in their applied aspects and in their relationship with a clearer understanding of their application in clinical medicine and surgery. It is obvious that reform in the present curriculum that would integrate the basic sciences with the clinical courses is necessary, and, with this end in view, the simultaneous use of the patient as a means of stimulating the student and aiding his memory would be of great value. Thus some of the time now devoted to the preclinical sciences might well be used to give the student an opportunity of gaining some clinical insight, his time being employed with more profit in the performance of blood counts, urine analysis, and the observation of such pathological factors as would enable him to gain a firmer knowledge of the underlying physiological principles.

Likewise, during the clinical period some time must be surrendered to the basic science faculties to permit the presentation of such anatomical, chemical, and physiological information as would be better appreciated at that stage by the clinical student. Most medical teachers will agree that, whenever possible, the content of courses in the premedical curriculum, particularly science courses, should include a generous amount of medical orientation. It would add to the student's interest and enthusiasm, tend to unify the educational process, and this could be done without any violence to the values of discipline in pure science.

It is hardly necessary to state that the study of pathology has developed into one of the most important basic medical sciences. Herein the undergraduate is introduced to disease : he sees the damage that is wrought by various factors and studies the changes in tissues in various stages of disease and the reaction of the tissues in their effort to conquer it. The gross and microscopical study of disease tissues thus helps him to a better appreciation of the laboratory sciences and clinical medicine. The same applies to bacteriology, which has grown at such a rapid rate that, along with chemistry, a new chapter has been added to the study of factors which control reproduction in bacteria. A good foundation, therefore, in this basic medical science and its techniques is essential for any well-trained physician.

One of the chief problems connected with the medical curriculum is the place that should be given to the specialties. With the ever-increasing number of specialties, there is always a demand that a study of these subjects should form an integral part of the medical curriculum. The result has been that the undergraduate syllabus is overloaded with a miscellaneous variety of factors. In the anxiety to get the undergraduate to know something of the ever-increasing number of specialties the necessary time is not available for him to get a thorough grasp of the fundamentals of medicine and surgery and to become really familiar with the methods of diagnosis and of rational deductions.

## SUPERVISED WORK

It is true that the amount of time devoted to didactic lectures has been steadily decreased, to enable the undergraduate to spend more time in supervised work, with patients in clinical clerkships. Whether these clerkships are in the wards or in the out-patient department is not so important as the character of the supervision and guidance he receives from interested and inspiring teachers. The object of the clerkship is to provide an opportunity for a student to follow his case long enough to gain a lasting understanding of the natural history of the disease and the methods by which it can be treated. With the rapid extension of laboratory tests of great accuracy there is a tendency to rely more and more on laboratory reports and less and less on the examination of the patient, the history of the illness, the family history, the environmental conditions, and the exercise of a wise clinical judgment. In many cases, of course, laboratory findings are required to arrive at correct conclusions, but the student must never be allowed to forget that the most essential consideration in arriving at

a correct diagnosis is to study the patient in all his aspects and not to come to conclusions on laboratory tests. The laboratory must serve as a good servant and not be permitted to become the overlord.

As the student advances in his use of observation and deduction great help can be gained through conferences, seminars, clinical lectures, ward rounds, and case presentation by students themselves ; these should all be regarded as essential elements of a well-conducted clerkship. Equally essential is it for the student to realize that the knowledge and experience of other professional and technical persons associated in the service of the patient are of great value. Nurses, medical social workers, dietitians, dentists, and others have a contribution to make to the students' better understanding and appreciation of the patient. The clinico-pathological conference is the foundation of all educational progress for clinical clerks as well as for interns, residents, and the whole staff : it is at these conferences that the test of good and bad medical practice and teaching can be judged. There is no substitute for it so far as intellectual discipline and stimulus to professional improvements are concerned.

## THE AIM OF TEACHING

The aim of undergraduate medical education is not to provide training in the highly specialized fields of medical and surgical treatment but to give a thorough grounding in the knowledge and synthesis of general medical and surgical diagnosis. Let it be realized that undergraduate medical teaching serves only to lay the foundation for the creation, of interest in a subject of ever-increasing complexity and to arouse in the student a psychological curiosity to develop the basic methods and principles that have been ingrained in him.

The successful medical practitioner is a perpetual student, and, in the light of the many developments that are taking place, thanks to the impact of the discoveries of basic sciences on medicine, it can easily be realized that it is not the knowledge of many unrelated facts but the analytical and the progressively expanding mind which will help the student to keep continually in touch with all receptive ideas in the field of science, particularly in its relation to medicine. The chief emphasis, therefore, should be on developing the student's broad understanding, scientific aptitude and approach, powers of accurate reasoning, judgment, resource, initiative, and a determination to put to test the knowledge that has been gained through study and observation.

It is from this point of view that the whole programme of undergraduate medical education should be reviewed. If specialization at the undergraduate level hinders the organization of a unified curriculum, if the curriculum tends to create any rigid barriers between basic medical sciences and the clinical instruction which should follow later, if it does not help to relate the education to the broader culture and science of the times both in the field of preventive medicine and in that of its social implications, then undergraduate medical education will have failed of its purpose. Medical students should be stimulated and inspired by modern concepts of social medicine to realize that they are responsible citizens of the future who should apply their profession, and the knowledge that they have gained, to the benefit of humanity.

## AN INTERESTING PERIOD

One of the most important periods of a medical student's career is the period of internship. He looks forward to this with great interest. The intern is not burdened with a schedule of classes and prospects of formal examination. He is free from the inhibitions of his undergraduate stage of study, and he has the joy of working with experienced clinicians and seeing how they combine the science and art of medicine in the treatment of their patients. The internship should strengthen and not weaken the student's appreciation of high scientific and ethical standards of practice. In the past, and as it still is in some schools, while the internship was regarded as a part of undergraduate medical education, it was almost entirely concerned with curative medicine. It thus failed in its objective, because internship, properly regulated, should contribute to a better appreciation of the possibilities of preventive and social medicine, and put the intern into closer contact with the life of the patient in respect of environmental conditions, his occupational hazards, and

the manner in which he can be rehabilitated. The internship should therefore be utilized as an opportunity of studying community medicine in all its many ramifications through public and private agencies, and should serve as an experience in the practice of preventive as well as curative medicine, in community medicine as well as in hospital and in the out-patient department.

## CONCLUSION

Thus it will be seen that no part of medical education is so important as that of the undergraduate, and, if the foundations are not well and truly laid, and the broad basis of the objectives of undergraduate medical education not thoroughly appreciated, the role that the future practitioner will be called upon to play will not be fulfilled and the usefulness of the trained doctor will be limited. Medical schools, the teaching profession in the faculties, and all concerned have to realize, therefore, the need for reorientation of the policy of undergraduate medical education, as indeed of all education in the field of medicine.

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*(By courtesy of the British Medical journal and the author.)*

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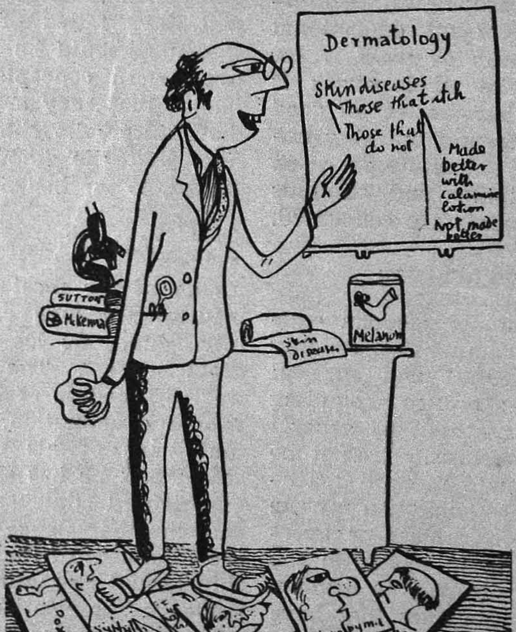


"Skin diseases may be divided into two groups—those that itch and those that do not. The ones that itch are divided into those that are relieved by calamine and those that are not. This then is about all you need to know in Dermatology."

# Basic Medical Education in India and Abroad

## (Observations and Reflections)*

*By*

A. ANANTHANARAYANA AYER, B.A., M.B., B.S., M.SC., F.A.SC.,

*Director and Professor of Anatomy, Upgraded Department of Anatomy, Stanley Medical College, Madras.*

I AM extremely thankful to the Deans of the two Medical Colleges who have afforded me this opportunity of speaking to my friends and colleagues on my observations during my deputation abroad. I had occasion to study the methods of basic medical education i.e. undergraduate medical education, post-graduate or graduate training and research in Anatomy and its ancillary subjects. I shall not give you a tiresome detail of the places I passed through, the persons whom I met and the educational or research problems I discussed with them ; nor could I possibly give now the details of scientific instruments handled and the methods of investigation seen at close quarters. All these I have kept noted in a detailed datewar diary. Further we have also maintained a complete journal of the social contacts we made with professors, their families, the discussions and queries and replies on cultural problems pertaining to India, the museums, art galleries and the famous places seen, as also the details of our travels and the subjective impressions made on us by the people seen in different countries. Many esteemed friends have expressed a desire to know all this and so a diary of our impressions and observations is being prepared for private circulation if not for publication and I assure you all that a complimentary copy will be with you ere long for perusal at your leisure and convenience.

But today I propose to give you a general bird's eye view of those observations relating to basic medical education only, reserving post-graduate education and research to another occasion.

The word observation implies what we notice from concrete factual things seen or heard and the reflections are my own reactions to these observations. While observations are mainly objective the reflections are mainly subjective. These objective and subjective impressions would be inter-woven in my presentation but you could easily disentangle them and find out what exactly are the observations and what exactly are the reflections.

To give a background of the tour on which these observations are based I shall briefly give a list of places visited.

I started from Delhi at 0.20 hours on the 21st September, was in London on the 22nd early morning ; after half a day's stay in London started for United States of America and arrived at New York on the morning of 23rd. The world has become so small now-a-days and in such a setting one feels the ridiculousness of the national barriers that people keep and continue to cherish. One mankind—one world—is the idea that strikes you in these fast air journeys.

On the 23rd afternoon I visited the office of the Rockefeller Foundation and fixed up a tentative schedule for my itinerary and commenced my work from the 24th.

Usually I visited the departments of Anatomy, Embryology, Histology and Neuro-Anatomy in the medical colleges. Often I side-tracked into the Physiology, Cytology, Genetics, Comparative Anatomy or Physical Anthropology departments if these were located close by or manned by very eminent personnel. I always rambled into the libraries and occasionally also into hospitals for some particular reason. If there were animal experimental surgery sections, I always took pains to see their working. Sometimes I met the administrative deans at their request and discussed problems of

* Abstracted from an address to the staff of the Madras Medical College and Stanley Medical College.

medical education with them. I have covered during the tour the concerned departments in the New York University, the Cornell University, the Columbia University and the American Museum of Natural History at New York; the University of Pennsylvania, the Temple University, the Jefferson Medical College, the Hahnemann Medical College and the Wistar Institute of Anatomy at Philadelphia; the Johns Hopkins University, the University of Maryland and the Carnegie Institute at Baltimore; the Chicago University, the North-Western University and the Illinois University at Chicago; the Michigan University at Ann Arbor; the Harvard University at Boston and the Yale University at New Haven. Then on to Montreal where I saw the departments in the McGill University, the Montreal Neurological Institute and the Department of Experimental Surgery. Then came over to the United Kingdom. I visited the medical colleges attached to St. Bartholomew's Hospital, the Charing Cross Hospital and London Hospital as well as the University College, London; and the Royal College of Surgeons and British Museum of Natural History and the Burroughs Wellcome Museum. Then I visited the medical colleges in Oxford, Cambridge and Edinburgh. With the New Year I came over to Paris and saw the Faculty of Medicine of the Paris University; from there to Geneva, Munich and lastly Rome where in addition to the medical college I also visited the Forlanini Chest Institute and the Mendel Institute of Human Genetics. I emplaned from Rome on the 19th of January and was back in India on the 20th. O the joy of being back in the Motherland!

*Basic Medical Education in America.*—Basic medical education has slightly varying courses, curricula, syllabuses and standards in the different medical schools in the United States of America, because the Universities there are not affiliating Universities but unitary Universities. Each college is a University. The medical graduates passing out of these colleges have to pass a professional examination conducted by The State Licensing Board before they can set up practice. Yet there are some common features which are observed in most of the colleges visited that I can speak of them in general terms without specifying the individual schools.

The average age of admission of the medical student is about 20; and he must have finished three years course in an arts or science college before joining a medical college. Usually, i.e. in 98 per cent of cases he is already a science or arts graduate with a broad grounding in the basic sciences including physics, chemistry and biology, and sometimes also even in mathematics. He takes to his professional studies with the avidity and seriousness of an apprentice who realizes the value of the knowledge being acquired by him even apart from the viewpoint of training in scientific methodology.

The teachers in the non-clinical departments are both medical and non-medical. The non-medical personnel are M.Scs and Ph.Ds in the subject who have taken their post-graduate qualifications after three to four years research in the subject concerned. Their knowledge of the subject is very detailed, but being non-medical men their contact with clinical material is nil and consequently their teaching is academic lacking the clinical bias necessary to the education of the medical student. However, the presence of some medical men in the non-clinical staff and the incursion of clinical teachers to take a few correlation classes for the pre-clinical students to some extent remedy the situation. I am told the percentage of medical men in the non-clinical line is gradually dwindling.

Every teacher in a medical college is intensely working on some research project concurrently with his teaching work. Though the actual number of hours may vary from time to time depending on the volume of teaching work to be done at any particular academic term, he is always engaged in some kind of work in respect of his field of research investigation. For example in an institution where Anatomy is taught as an intensive course in four months and Physiology and Biochemistry as an intensive course in the other five months during the first year, the anatomy teacher finds that during the intensive course of teaching the spare time available for anatomical research is only very little, but during the rest of the year he gets practically the whole time available for research. Every teacher aims at not only being a good teacher who conveys to the student the knowledge acquired from books but himself tries to contribute some

orginal knowledge in a particular field by his research and the students are aware he is a recognized authority in that field ; this, I think, makes the particular teacher's teaching more effective in every class that he takes even when the subjects taken are not related to his special field of original work.

The college working hours for the pre-clinical students generally extend from 9 a.m. to 5 p.m. Though the roll is not called for any class, the class strength is full. As individual teachers come into contact with a small group of students and intimately follow their daily progress in practical classes, the continuous absence of a student would easily come to notice and appropriate action is taken.

There is a usual misconception that more arduous work is possible in colder climes as the weather is stimulative of work, and on the contrary the climate in tropical countries is enervating. While admitting that some of the hot months in India are very trying, they find abroad that some of the colder months are equally trying. They have to wake up, wash, dress, breakfast and go to work before the day dawns and the work is finished only when the night seems to have far advanced. The clock keeps the time of work without any obvious correlation to the rising or setting of Nature's time-keeper, the Sun. The journey to work and back home in such cold weather is certainly inconvenient even to those long acclimatized. The cold weather probably makes them eat better and do more continuous work without fatigue. In late winter they look forward to the spring and summer and the warm sunny days with an eagerness which only those who have lived in frozen countries could realize. On the other hand most of our seasons are equable, congenial and optimum conditioned for mental work, of course excluding the couple of very hot summer months. I should think the excuse that our climate is not suitable for work is a lame excuse given by the indolent to shove the responsibility from their indolence to some other factor. What exactly are the causes of this indolence, I will mention later while dealing with motivation for work.

The cadaver material for dissections is adequate in some of the schools but inadequate in some, and one notices that most of the bodies are of very old persons. It shows the effectiveness of health measures in lessening untimely death. In some places full term foetuses are also utilized for dissection work. Where there is intensive teaching of anatomy the dissection course, the lecture classes, if any, and micro-anatomy are all finished within four months. In other places the subjects run concurrently with physiology and biochemistry throughout the year. So the dissection schedule is arranged in a manner that the course is finished either in four months or in nine moths, in the different schools. The economy of time is effected by the elimination of muscle and structure cleaning and the avoidance of the minutiae in the study. However, if all the joints of the upper extremity or lower extremity have to be completed in a day's dissection, I should think the time and attention devoted is absolutely insufficient. Regarding the intensive course I have very definite opinions that beyond a stage any intensive course will fail in its purpose. The reason is this. Man may travel faster by speeding up the machines of locomotion but he cannot learn quicker as the biological process of thinking which is essential for learning has not yet been speeded up to a higher velocity even in western countries. When a set of facts are presented the process of registering them in our memory and associating them in our mind and out of this association to create our own original mental impressions and concepts, these thinking processes are the same now for modern man as they were when man was a cave dweller. I do not think the intensive courses are a success anywhere. I believe it is better to learn slowly but surely.

Another point relevant to the teaching of anatomy by non-medical men becomes apparent when you make the rounds in the dissection halls. A non-medical teacher was teaching topographical anatomy of important regions like ischiorectal fossa or inguinal canal. The teacher had not at any time seen a case of haemorrhoids or cirrhosis of the liver. His teaching lacked the effectiveness which could be brought into the instruction by one who had some clinical knowledge and insight. I was told that the necessary clinical bias would be given by the few teachers who are medical men and later in the correlation classes taken by the

hospital staff. However, I feel it would be proper to have medical personnel to teach basic medical subjects to medical students. In many schools didactic classes are getting out of vogue and the smaller classes with a small group for demonstration or of the seminar type where more personal discussion is possible, are becoming popular. The students naturally appreciate the smaller class that brings them into closer contact with the teacher and the specimen. In a small number of medical schools all class lectures have disappeared. It does not seem advisable thus to throw overboard all didactic lectures, because a senior and experienced lecturer presents a wide perspective of a subject giving the basic principles and the guidance necessary to enable the student to discriminate between fundamentals and minutiae ; no amount of book reading or practical work or demonstrations or quizzing in seminars could replace such a general lecture. This elderly teacher could not be expected to repeat his lecture from batch to batch for all the batches into which the whole class is divided for demonstration purposes.

Among the subjects that have seriously suffered a partial eclipse due to the elimination of lecture classes the saddest instance appears to be embryology. This, what I should consider, a most important and valuable subject that makes many otherwise uncorrelated anatomical facts comprehensible, is not given the emphasis due to it in many of the medical schools. The few exceptions are those where the head of the department happens to be the author of a standard book on embryology. While not overdoing embryology, this subject must be given a reasonable and fairly important place in anatomical teaching and it will be of great benefit to the student. Histology gets the usual emphasis but the students in western countries do not make their own slide preparations by daily routine of staining and mounting. The students are provided with a box of slides of typical tissues. The students have to own their microscopes and hence they examine the slides not only during the regular histology classes but whenever required and thus their knowledge of micro-anatomy is well set.

The teaching of neuro-anatomy is undertaken in much greater detail in America than either in India or England. In some departments there are very interesting and educative courses of reconstruction of the brain and nervous pathways with magnified modelled sections in wood, wax or plasticine with coloured wires to represent nerve fibres and similar contraptions. Some of the reconstructed models made by the students are scientifically accurate and exquisitely artistic. But the time for neuro-anatomy is found by cutting out the time devoted to certain other important items of study.

In all classes other than practical classes visual education plays a very important part in the form of projection of films, strips, lantern slides and kodachromes.

As regards Osteology and Myology the students learn the fundamentals only. The detailed study of the multifarious origins and insertions of muscles gets less importance, but the actions and nerve supply are well emphasized. This is as it ought to be. The minutiae of arterial branchings and fascial spaces, times of ossification of epiphysial centres and eruption of teeth, etc., are less insisted. In a country where there is a fully competent, well ramified dental profession looking after the dental health of the community, the medical student could well afford to be unconcerned about the detailed anatomy of the teeth, but not so in India. The details of ligamentous attachments and morphology are skipped over but dynamic movements in the joints are fully emphasized. The anatomy of important surgical fields is one that has always received, and correctly so, a better emphasis in the medical colleges in India because the medical graduate who becomes a general medical practitioner in India has to undertake in the local setting in this country certain types of major surgical interference like appendicectomy or operation for strangulated hernia or an acute abdomen, conditions which never normally come into the field of activity of a general medical practitioner in a western country where surgical speciality has reached a great peak. So long as the number of medical personnel in India remains inadequate for the total needs of our vast population, it is essential that our under-graduates in the medical colleges should be given that complete and detailed course of topographical anatomy that emergency surgery will require. Our standards therefore cannot be set on the same footing as those in the west.

One note worthy feature observed in many American medical schools is the setting apart of a small period of time as an elective hour when the student is not obliged to do any specified piece of study or work but is left to himself free to utilize the time in some subject that interests him. This time is spent in widely divergent interests ranging from laboratory research to attendance or study at non-medical disciplines in departments of science or humanities within the university. The way the student has spent his elective hour is considered to be of great value in assessing his inclinations and competence. I heard excellent reports of students engaged in research problems in pre-clinical departments while doing the clinical course. This is highly commendable. A student's time should not be so fully filled up with hours of routine learning that he has no time for what I would call an interesting academic hobby apart from leisure for recreation. It is a great pity that both here in India and elsewhere sometimes the poor medical student is so overwhelmed with routine work from morning 7-30 to evening 5 that he finds himself intellectually and physically staggered by the close of the day. I would consider it advisable to lessen the total working hours per day so that his intellectual work could be more efficiently carried out.

The examinations are not a nightmare to the American student. Usually the failure in examination is a very small percentage, less than 5 per cent, and consequently repetitive time spent for additional courses is usually insignificant. Most of the students graduate at the end of their regular course. The tragedy of 10 or 15 students graduating out of a batch of 100 that joined the college five years back, as frequently occurs here does not occur there. The examinations are more lenient, the examiners are more liberal and the students are more hard working. In many places periodical, monthly and terminal examinations, written, practical and viva are held and the progress of the student in toto is assessed. There cannot possibly be vicarious failures as frequently happens here where the academic fate of a student hangs on the slender thread of a single examination. Each college is a university. There is no external examiner to frighten the student and to make a professed claim of maintaining standards. In some places the question paper is of the numerous multiple choice question-answer type where the student just indicates the correct answer rather than of the essay type requiring cogent thinking and writing. I think that the omission of the essay writing is a serious defect wherever it occurs and has to be remedied; otherwise the student does not get the capacity to synthesize the piecemeal knowledge of different aspects of the same problem. A combination of the two types of question paper would be ideal especially in view of the professedly high aim of medical education implied and often explicitly expressed.

Most of the progressive medical schools are trying their own individual experiments in education suited to the genius and concepts of its senior professors. Everywhere one is told that great emphasis is being laid on the student's learning rather than on the teacher's teaching as if the two aspects of the educative process are distinct and separable commodities. The activity or passivity of the teacher's teaching might vary from individual teacher to teacher; it is perhaps the passive teaching that is aimed at. One great university proclaims in its bulletin of information that in that university great importance is laid on the fact that the student has learned to think for himself, to explore, to work hard under his own initiative, to face alternatives and make decisions and to develop a desire for a continuous programme of self-education. Students planning a career in medicine should be motivated towards becoming leaders in medical thinking. Fine sentiments, beautifully expressed! I believe most educational institutions keep this in mind. It is good that such sentiments are trumpeted aloud so that the alumni will repeatedly hear about this and so by a process of auto suggestion re-create their academic lives accordingly.

The average expense of a medical student in America is about $2,500 a year. Even in a wealthy country this amount is considered large. The student who incurs this expenditure is naturally motivated to finish his course in the shortest time possible.

In one institution I happened to ascertain the annual budget for apparatus and stores for the department of Anatomy. It was about $60,000 or about 3 lakhs of rupees. It did not include salaries nor heating nor lighting. A medical college in India gets

approximately half a lakh of rupees per year for apparatus and equipment; assuming that an important department like Anatomy gets one-sixth of this amount, i.e., about Rs. 8,000. Even then the department in America gets about more than 30 times the budget allotment in India, and mind you, microscopes and chemicals are cheaper in America than here. This shows how inadequately we are provided for here as regards equipment. How to improve our present medical colleges to comparable world standards? How to find money for this? How to produce a much larger number of doctors that our country and people need, these are matters I will consider sometime later.

*Basic Medical Education in the United Kingdom.*—The general system of medical education in the United Kingdom is very much as in India. Cambridge has an extra year for pre-clinical studies totalling three and all its alumni become graduates in science as well. This similarity of medical education in the United Kingdom and India is naturally to be expected, because our system of education has been modelled on the English prototype with modifications. The medical colleges are better equipped than in India, but as regards the more costly apparatus there is a wide gap between England and America. The students are generally very hardworking but the nightmare of examinations stalks that land just like ours. The word "coaching" for an examination occurs in the English setting with a real significance; whereas in the States we get only learning and teaching ; coaching is for an examination outlook or perhaps to satisfy the individual whims and fads of particular examiners concerned; it is not the comprehensive understanding or study of a subject or science. In India we have all the evils of the examinations as in England without the splendid methods of coaching adopted there. What a pity for the poor medical student here!

*Basic Medical Education in the Continent.*—Though I visited only a few medical institutions in France, Switzerland, Germany and Italy, each of the medical colleges I visited was typical of the country and by information one of the best equipped for each country.

The first thing that strikes a visitor in continental colleges is the vast concourse of medical students in each college. The number of students admitted in a year in the college in Geneva was 250, in Munich 400, in Italy 700 and in Paris 1,500. I was staggered at the vast number of students admitted in the Faculty of Medicine in the Paris University, at its extensive buildings and lecture and practical halls to hold all this multitude. It was one college equal to 15 colleges in India or America as regards the numerical strength. All the lecture theatres have provision for loud speaker amplification of the class lectures. The permanent staff consists of a professor, associate professors for embryology and histology and three assistant professors, and there are about fifty demonstrators. These junior staff have also part-time work in the hospitals in the mornings. All the students in France have hospital postings from the day they join the medical course which extends to six years. In Germany or Italy it is seven years. The afternoons are utilized for collegiate teaching and the students throng the college halls in the afternoon after lunch, i.e., at 2 p.m. and the college work continues till 6 p.m. In a college admitting 1,500 students it is needless to say it would be practically impossible to provide adequate dissection material. So greater emphasis is placed on demonstrations. These are many demonstration halls in which each student has on his table a prosected part. He can handle the parts and structures but he should not dissect them out. A demonstrator talks on the part and indicates in his specimen the various structures and all the students observe the structure on the specimens before them. It is not seeing from a distance but actually seeing in one's own specimen though not dissected by oneself. I think that this method of teaching is good in the difficult circumstances of such a vast set-up. I asked one of the important teachers whether this was an ideal method of anatomical teaching. He was aware that I was returning from a study trip in America and should have noticed the contrast in numbers of students and methods of teaching. He smiled and said that they were aware it was not the best method possible, that this might be a temporary measure, but their country required more doctors and there was no other way than to admit such large numbers to the medical college. But he said out of these came the best physicians and surgeons

and research workers, because according to him France was no whit below par in the creative output in medicine. I understand the examinations are stiff but not difficult as the professors concerned are responsible for conducting it. In Italy I am told there are no written examinations at all.

Seeing all this I return and while on the way I was reflecting and brooding over what I had seen.

There is a vast difference in equipment, in student numbers and in educational methods adopted in these different countries. But they all try to solve the problem of supplying adequate number of medical personnel for the service of their people. In America there were enough number of medical institutions and the number of students admitted each year ranged from about 60 to 100. They aimed, as they have openly professed, to produce quality rather than quantity. I am told there are also some medical schools in America which admit two batches of 200 students each year for an intensive training in Anatomy. However that may be, there is no comparison with the 1,500 admissions into a single medical college as I found in Paris. There they aim at quantity. Meanwhile they have an inner assurance that out of this churning of their vast numbers would automatically emerge the doctors of quality coming forward by their intelligence, inner motivations and personal grit without any special drive aimed at nurturing quality production. They are also right. I think out of this vast indifferent mass the quality doctor or the cream of medical scientist would emerge not by a process of artificial cultivation but by a spontaneous process of self unfoldment. Much may be argued on both sides. In America probably the average is turned into a better finished product than in Europe. But the talented one has a chance to unfold his personality in both places.

What about India? Our medical colleges are inadequately equipped. Though our students are comparable to the best anywhere in the world in intelligence and alertness, they lack the motivation that one sees elsewhere. I will explain why it is so presently. Though our staff are as good as any anywhere, they are not turning out the quantity of real original work that they ought to do in the setting in India. There is of course the lack of equipment, but more than the lack of equipment is a lack of motivation for scientific work. They are satisfied to be good practitioners of medicine in their generality or speciality, or good teachers doling out second hand knowledge. Why is it so?

Why is it that in America there is a better motivation among collegiate staff for scientific work? The students naturally get initiated by it and imbibe it. In one of the important medical schools I noticed a very promising young anatomist of 3 years standing as a teacher who was doing excellent work in the department. I knew he would make an excellent worker in any field of biological or medical science. I asked him how long he proposed to stay in anatomy. His reply was "so long as Dr. . . . the chief will keep me". That meant all junior staff in the department are appointed at the discretion of the chief and continue as long as he would like to retain them. The head of the department has no other consideration whatsoever than the scientific name of the department and the worth of the candidate to be a member of its staff. If a person sits and rusticates in his chair, he is mercilessly sent out to seek his fortune elsewhere. The set-up is so different here in India where service conditions prevent even a laboratory attendant being sent out for slackness of duty. We may be able to discharge a man for open dishonesty or defalcation but not for being easy going. Further take the case of a briliant young anatomist in America. He has chances for promotion not only within the orbit of his medical college but anywhere in that vast continent. I found that the chair of anatomy in the Cornell University was vacant but subsequently discovered somewhere else, far away, the professor-elect, now a junior associate professor. He would be joining Cornell University in January 1955. He has been chosen on the basis of his outstanding work. So, for a good worker the vast country with its immense opportunities for high positions is open before him. Thus there is a weeding out of the incompetent and there is an encouragement for competence. There is a push and pull system of academic preferment. How different from the state of affairs here in India where service seniority is the only thing that counts and the security of service gives birth to the monster called mediocrity. And the students

take their ideal from their teachers. No wonder!

Further, in the general medical field the very fact that there are not enough doctors in the country gives an assurance that whatever might be the intellectual or professional outlook of a doctor he would get a decent living. Why then exert or work hard? There is no struggle for existence among medical men to whet and whip up their efficiency. My opinion is that the very fact that we are not turning out adequate number of doctors is responsible for the lack of quality. If we want quality doctors it is only out of a vast struggling mass that quality men will rise and come to the top. Secondly, if we want better training of medical students in better equipped medical colleges the present medical colleges have to be improved a great deal. Let us not have the false complacency that we are as good as others. I have heard whispers that way. Our student material is as good, I admit, but our institutions are not as good. We want vast sums of money to purchase equipment, to improve the existing colleges. There is no purpose in opening more medical colleges with inadequate equipment. How are we then to provide the large numbers of doctors that our vast population require? There are some apparently knowledgeable quarters that say we do not require more doctors. I do not take them seriously, for it is so obvious to any thinking person that in a country with a vast population living in squalid huts in insanitary villages and in poor economic status, disease to be cured will be more and preventive public health work will be more than in a more advanced western country. There is absolutely no doubt that we want more doctors. I can convince any reasonable person that we want six times more doctors than at present for we have one scientifically trained man for six-thousand people while in England and America they have one for a thousand people. In Scandinavia they have one for six hundred. How are we to turn out six times the number of doctors we have, in a near future of say 10 or 15 years? Who is possessed of this pressing problem?

Many are apparently possessed of the problem. The Governments, the Universities, the Medical Council of India and the various Medical Associations. But nothing tangible comes out. Nor is there a clear vision for the realization of the desired result in any near or remote future.

To present our inadequacy in medical personnel in an effective manner I will give some data. We must remember that about 20 years back there were a large number of medical schools turning out L.M.Ps. Now they are closed. We had a total strength of 8,000 medical practitioners in the undivided Madras State. Assuming that the average working span of a medical man is 25 years, we require about 320 doctors annually to replace the casualities among the existing medical personnel. But all the medical colleges together turn out just this number. That means we are not adding any moiety to the total number of doctors.

The first suggestion that comes to mind is to have a five fold number of medical colleges. In our financial condition we cannot afford it. Someone suggests admit a five fold number to the present medical colleges as they do in France. The Universities naturally object, as this will bring down the standards and they are perfectly right. If we ask the Universities what should be done, they say it is the concern of the Government and not theirs. The Universities represent the educated elite, the cream of culture , the aristocracy of intellect, the class as distinct from the mass, high thinking and high living. They are correct in their own grain. The Indian Medical Council maintains the standards set by Universities. It inspects them. It is a super university. It has committed itself to keep the highest standard compatible with international standards. They are right in not favouring the starting of medical schools and the creation of a double standard of efficiency.

The Indian Medical Association is a professional association of medical men. Naturally it is dominated in its membership by those in private practice. I am in it but not of it. (He took his watch in his hand.) My watch is in my hand, it is not of the hand. My fingers are of my hand. The Indian Medical Association is a body of general practitioners of medicine and whenever vested interests came into clash with national interests no one will expect the vested interest to yield unless compelled. Therefore the Indian Medical Association and the

medical profession is opposed to any move which will increase very largely the number of medical practitioners in the country.

What then are the people to do? To whom are they to go for succour ? Who really represents them and has the interests of the people at heart? It is only the democratic governments of the states and of the centre in India who are trying their very best to create a socialized welfare state for the people of India. They seek advice, but the Universities, the Indian Medical Council and the Indian Medical Association do not give practicable advice. Being the management that runs the majority of medical colleges at present they cannot afford a five-fold number of medical colleges in their present financial inadequacy. The only way the problem could be solved is by opening medical schools and by bye-passing the Universities and the Indian Medical Council and the phantom of international standards. A medical school is only one-fifth as costly as the medical college and the doctors turned out of this school after a four year course can do excellent work even as the hundreds of L.M.Ps. turned out from the old medical schools are even now doing most excellent and meritorious work. This suggestion has to be taken up and worked out if we desire to give to our people the amenities that modern medical science can certainly give. If any other concrete suggestion could be put forward, let us have a workable suggestion. Let there be no inertia and indifference.

Let us come to the financial implications in the actual execution of the scheme. A medical college costs about a crore of rupees and even then it is not the very best. Really a larger investment is necessary for making our colleges comparable with similar institutions abroad. A medical school on the other hand if started in a place where there is already a 200 to 300 bedded hospital will cost only about 20 lakhs. How can this be done? Give me a building as spacious as the Anatomy Physiology block in the Stanley Medical College. I could accommodate all collegiate departments in it. Give me 10 lakhs of rupees for equipment. I could equip well enough for its needs. I will teach anatomy without a minute dissection course of 18 months by giving demonstrations for a period of only one year: That would be sufficient for the general medical practitioner. I would teach histology by demonstration of slides and 10 microscopes, each student getting a turn. I will cut down the amphibian experiments on the muscle-nerve preparation and the perfused frog's heart from individual student experiment to class demonstration. Thus I will economise 50 rotating drums. Likewise in other subjects. In Pathology the students will learn general principles of Pathology but not histopathology or tumor-pathology. But as regards the experiments in the clinical laboratory every one of then will be retained in the hospital clinical laboratory. I will not detract an iota from the training in medicine, surgery and midwifery. With a four years course I am confident I could turn out a doctor who will be quite competent to tackle any medical problem that will face a general practitioner. Are you sure they will be satisfactory? Someone asks. If I retire from my job and settle down in a village, with full confidence I will place myself in the hands of such a doctor if I should fall sick. What more can I say? I am convinced that the only way in which we can produce a really large number of doctors to suit India's needs is to open more medical schools in India. Then the present colleges can be improved to become first rate institutions with international standards, turning out quality men who will be leaders of world medical research and thought.

I have spoken for long. I have given out the innermost thought that passed through my mind as I was travelling back home from abroad. I may be right or wrong. But I am earnest about getting something done within a predictable future time, which I put as 10 to 15 years. Only I pray do not be indifferent. The masses of India are the blood of our blood. They deserve, how-much-so-ever poor they may be, the benefits of modern medical science. Do not deny it to them. Nothing dehumanizes man so much as apathy or indifference to a fellow human's plight. Let us not dehumanize ourselves. Let us do something to change the stalemate; let us, the educated ones, be worthy of the trust that our own people have laid on us.

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# Some Thoughts on Medical Education

## (With Special Reference to Teaching of Medicine)

*By*

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THE subject of medical education and the methods of medical education in all the various aspects are very much in the thoughts of medical administrators and teachers. In a constantly changing world, and the changes being very rapid at that, it is only natural that ideas and ideals should also change; and we are now on the verge of such a change in respect of medical education also.

There are many aspects from which the question could be considered and studied. I shall try to put down my ideas on some of these as they have occurred to my mind from time to time.

*The Objectives.*—What are the objectives of medical education? Under-graduate medical education should, I feel, have as its objective, the imparting of such basic and fundamental knowledge in the subjects, in a correlated and integrated fashion, so that when one finishes the education, he is in possession of a certain amount of necessary knowledge. From then onwards he has to continue to be a student for the rest of his life-time, and add to his knowledge by further continued study and experience. He should be in a position to properly assimilate all this and improve himself as time goes along.

There are some who think that the student must be taught everything that the teacher may know. On the very face of it, it will be obvious that this will defeat its own object, in that, with the multitude of things which the under-graduate will be taught, he will probably not know the grain from the chaff or the tree from the wood.

The next objective of teaching is that it should equip him with the necessary knowledge to be able to perform his functions as a capable doctor attending to the ailments of his clients. In other terms it should be a discriminative type of teaching. We will thus be preparing the under-graduate (1) to be a successful general practitioner and add to his knowledge by his work; and (2) if he chooses to take the other line he will still be capable of taking up advanced study in any branch of medicine or surgery to which he feels drawn.

### *What should be taught and how should he be taught?*

Medicine is a vast subject in itself, and it now includes in its ambit, subjects like Social Medicine, Preventive Medicine, etc. There are many branches of Medicine which have become specialities like Tuberculosis, Pediatrics, Psychiatry, Neurology, Cardiology, etc. It is obvious that everything could not be taught about all these specialities. I have often wondered how we of the older generations, did acquire a good working knowledge of some of the specialities, even though we were taught by the general physician and the Prof. of Medicine, in contra-distinction to the present position when the subjects are being taught by Specialist Professors. It has also to be considered that the under-graduate has barely enough time to study the major disciplines of Medicine, Surgery and Midwifery with Pathology and Physiology and Anatomy as the basis. The Professors in the three main subjects should also deal with the portions now being taught by the specialists in an adequate and comprehensive manner so that the under-graduate gets a good grounding. This does not mean that I am against the development of these specialities. All developments in the right direction are necessary but I feel that the real place of specialists should be in helping to train others in the speciality, from among the under-graduates who show an inclination or a desire for the same.

*Clinical teaching of Medicine.*—Medicine as contrasted with Surgery is a more difficult subject to demonstrate to a group of students, the number of demonstrable diseases being very few indeed, and if the

number of students with a physician happen to be more than a limited number, such demonstrations like auscultation phenomena will necessarily take a longer time. The method of teaching most suited appears to me to be the one in which the student is encouraged at all stages, to make his own observations, express himself in appropriate terms, to be corrected and guided by the teacher. And again the student must be encouraged not to accept any statement on the face of it but to ask himself questions as to the why or the wherefore of any particular phenomenon, of a finding or of any statement. It is this tendency to constantly question himself and obtain explanations which should be acquired by the students. This will in turn be reflected by questions from the student to the teacher and I consider that that clinical class is successful where a number of good questions asked by the students to the teacher are increasing. Thus teaching must be stimulating thought. It must encourage the students to get into the habit of analysing his ideas, putting them to some order and try as far as possible to correlate the findings with altered physiology and pathology. This in turn leads us to the question of the quantum of supervised work, of the students. The greater it is the better it will be for the students. 'Verbal diarrhoea, on the part of the physician, however learned and complete it may be, will not have even one-quarter of the value of probably the much less information, transmitted to the student by the method of questions and answers trying to explain the 'whys and hows' of problems on a rational basis.

The students should necessarily be taught more of the common diseases, prevalent in their local area with less emphasis on the lesser problems or rare diseases. To that extent teaching must be discriminatory. The above method of teaching would require a much larger proportion of qualified teachers with smaller groups of students, conditions which at the moment are not obtaining in most of our institutions. The use of black-board in clinical teaching of medicine should be very limited indeed, and should be used only occasionally for purposes of drawing diagrams, etc., and to force home a point easily. More and more emphasis should be laid by the teacher on the importance of the clinical methods of examination of patients with good training in the art of obtaining a correct history of each case. In coming to a correct diagnosis the data from the laboratory and other ancillary investigations should have only their rightful place in helping the process but not permitted to take an almost overriding importance which seems to be the trend in many quarters.

*Systemic didactic lectures.*—Since 1947, when I started lecturing to classes, I have been realising in an increasing measure, from year to year, that the less the didactic lectures the better it would be for all concerned. It is true that for a particular type of student, the fact that a particular subject has been lectured in the class by the professor is probably the best stimulus for him to study the subject afterwards; and he will not ordinarily study anything else which has not been done in the class. The subject being so vast and the professors hard put to it to barely complete the lectures on essential topics, it is only natural that a good portion of Medicine often remains without being taught at lectures.

Another aspect of systematic lectures in Medicine is that they are now being given in the two years immediately following the pre-clinical studies and during this period the amount of pathology taught to them is so little that any attempt at teaching medicine alone with special pathology of the region is bound to be a failure because the students are not in a position to grasp this bit of special pathology. I fail to see much use in teaching Medicine without such study of associated pathology, particularly during the first year of clinical studies when teaching of Medicine seems to be more or less a compulsory act without much benefit to the students. A change in the timing of these lectures to the Fourth and Final seems to be strongly indicated if they are to be of any use.

*Other methods of study:* (1) *Integrated or correlated studies.*—The correlation of the preclinical subjects of Anatomy, and Physiology with Pathology and Medicine in the process of teaching seems to be a desirable objective but the ways and means of bringing about this integration are not yet clear and are still in experimental stages of trial in various places and in various patterns. There are some who are for a vertical inte-

gration and some again for a horizontal integration. Whatever it might be it looks as if professors of Physiology and Anatomy must give a strong clinical bias to their teaching of the subjects with greater emphasis on Applied anatomy and physiology with special reference to living patients; and on the other side the teaching physicians must also try to co-ordinate teaching on appropriate topics in conjunction with the Prof. of Anatomy and Physiology. The Prof. of Pathology I am sure has to come into the picture often enough to give his ideas on each subject.

This raises the question of further integrating preventive and social medicine along with studies of the various topics in Medicine. This again I think requires a deliberate effort on the part of the different professors to see how far and how much they can bring about a close correlation in teaching so that the student gets a broad idea of the whole topic rather than in isolated patches.

(2) *Group students.*—This term would mean study of a particular topic by a small group of students with the help of their teacher. Group studies are highly desirable and is being practised, I am sure by our students among themselves in a small measure, though not under the aegis of a teacher. Such discussions are very fruitful in adding to their knowledge, and also in clearing up doubts which are bound to occur. Again it is the paucity of qualified teachers compared to the number of students which militates against this being adopted on a more firm basis.

(3) *Audio-visual methods.*—These have come to stay and one of great help in making lectures more clear and impressing the essentials on the audience. I feel that in the teaching of medicine we must take in these methods more and more because it is not the quantity of what is taught which is important but the quality and the ease with which information is imparted with such audio-visual methods.

*Teachers and students*: I think I must say something about teachers and students to complete the picture. A successful teacher is the one who is capable of stimulating thought in the student. Some teachers are of course born but most are made by themselves. I do remember how when I was asked to teach some portion in surgery early in my service I felt very diffident and I did not know how I got through that hour but the Will and the Desire were there that I should be able to put things across to my students clearly. Latterly it has been my aim in teaching to explain things in a rational manner, so that the student could easily remember things better and much longer, because he has learnt it by a process of reasoning.

It has been often said that medical teachers may also require training same as teachers in arts and sciences do get special training even after obtaining their degrees in their subjects. I am afraid the disciplines of Medicine, Surgery, and Midwifery are not such as will permit of any such cut and dry training to be adopted. No two teachers are alike and each one tries to do his best according to his own lights. Each one will however watch and follow the methods of other eminent teachers in the world in his subject and will suitably assimilate fresh methods and improve himself from time to time. Given opportunities for such contacts, they are bound to improve.

What shall I say about the students? They are all good, all anxious to make good in the profession and as such willing to absorb knowledge like the proverbial spong. The strong desire to be a good doctor when he passes out is the one feeling which should motivate every medical student. If there are any, without such motivation. I am afraid they have come to the wrong place, and the sooner they develop this motivation (if they can) the better it will be. If they cannot they will probably end as misfits in the College and in the profession. I trust people of this category will be very few indeed.

I have in the above few paragraphs tried briefly to indicate my own personal views on some of the questions affecting medical education today. These have been developing in my mind over the past 15 years as a result of constant teaching and experience and I have put them down for what they may be worth.

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# Medical Colleges - The Basis for Selection of Students

*By*

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IN days gone by applicants to Medical Colleges were few and the number of places abundant that the problem was not of obvious misfits. To-day the number of candidates seeking a seat in a medical college is so great in relation to the number of available places that selection has become a grave problem. In Madras State only one out of four applicants could be taken in this year. Who should be given a place and who forbidden ?

The men who sit in judgment on the selection committee are entrusted with a great responsibility and an unenviable public duty to discharge. Faced with a hoarde of expectant candidates and a relatively short time to interview them, the Committee had to decide who they would admit and who they would bar. To say to some aspiring student of medicine 'You may not enter medicine' is a very serious thing ; and any error of judgment would be the height of social injustice.

To accept some candidate who subsequently turns out to be unsuited is not so catastrophic because he gets to abandon it at some stage or other, may be often with less of a smile than the women students do when they find marriage a pleasurable alternative.

What are the motives for anybody taking to medicine as a profession to-day ? With the paucity in State endowments and scholarships, the fast dwindling fortunes of the middle class families and the great length of the course, it must be a brave and resolute person who embarks on this exacting study. A desire to study medicine must be backed by the command of adequate financial resources to achieve the end in view, assuming that it is possible to satisfy the selection board.

On what basis should selections be conducted ? What qualities should a candidate possess to secure admission to a medical college ?

It was my great good fortune to be present at the First World Conference on Medical Education sponsored by the World Health Organization and held in London in August 1953. At this conference Medical Educationists from all over the world came to present their views on the different aspects of medical education, and it was to the great credit of India that the Vice-Chancellor of the Madras University Sir Arcot Lakshmanaswamy Mudaliar was one of the Vice-Presidents. My own teacher Sir Lionel Whitby in his Presidential address to the conference speaking of the qualities desirable in the ideal medical student, irrespective of the part of the world from which he might come, said, " He must be cultured, broadly educated in the Humanities, intelligent and intellectual, of transparent integrity and sympathetic, and, above all, one who will love his profession as well as his fellow men and all their weaknesses, their joys and their sorrows." Sir Lionel himself confessed that not all students can attain such an ideal but all should have at least some of these qualities either inherent or capable of development—without it, however well the teaching may be, no man can benefit by it.

There are two factors on which a candidate should be assessed. They are :—

(*a*) Intelligence, and
(*b*) Emotional stability.

By intelligence is not meant the sort of power by the use of which a candidate has the knack of passing examinations with marks ranging down from the maximum. Intelligence means an agile mind capable of abstract thinking, able to make logical deductions, to make observations of facts and critically analyse them. The candidate should be mature enough to think for himself, to judge for himself, and at the same time be humble enough to want to seek knowledge—*for* without this, no healthy

pupil to teacher relationship can exist. Intelligence can be assessed to some degree by previous records at schools and colleges where men of integrity have judged the candidates ; and further completed by personal interview combined wherever feasible by an intelligence test.

The candidate should be questioned carefully on the motives which prompted him to seek a career in medicine. In many cases it may have been parental pressure (the father may be a doctor and cherish the hope that the son will follow in his wake), or it may be social vanity, or just a desire to do something little knowing what the career implies.

Any one who has the illusion that one can make money in medicine should be disillusioned, for a man who makes money in medicine would probably have made equally as much, perhaps many times as much, in any other walk of life. Some candidates may be led to think that medicine is glamourous (who can fail to be impressed by the popular film or story book version of a famous surgeon performing a heroic life saving operation taking all the credit for himself). Perhaps some are confirmed in this belief when they find that a prospective father-in-law in his quest for an eligible bridegroom having failed to land an Indian Administrative Service boy turns his search to the Medical College ! Some are carried away by the craze for speciality which having ceased to be a paying proposition in the West is beginning to wane in India also, but for totally different reasons. Besides, how precarious must be the hope of entering a speciality these days with so many obstacles scattered in an already difficult path. Some there are, who, while accepting that India is perhaps one of the few countries where the young doctor gets a raw deal for all the energy and devotion and the many years he spends on study to qualifying for a medical degree, find satisfaction in knowing that there are other professions much worse off : this very feeling might motivate some to take up medicine.

At an interview a candidate's claims of having a high personal integrity or the possession of a special philosophy or aptitude can be assessed and dismissed for what it is worth.

Certain qualities there are which an understanding person may assess by talking to the candidate for a half hour. Does the boy (or girl) have common sense, resourcefulness, persistence, energy, a real interest in the subject and a sense of humour (this last being quite a valuable attribute). Does he possess a stable temperament governed by reasonable optimism ? Does he have an objective sympathy with human problems ? Does he show a willingness and ability to express an opinion which can be understood quite easily by men in all walks of life ? All this is comprised in the word "Personality" and the assessment of Personality is a very important factor in choosing prospective medical students. If the State means all this by "Personality" surely the increased recognition they have given to this aspect is a laudable step in the right direction.

The boy who is very shy and non-communicative, the swank, the egoist, the aggressive and the mentally immature lacking in confidence are obviously unsuited to take up medicine because these qualities would adversely affect the future relationship with patients.

The time has surely come when we in India must attach less value to performance in examinations as a sole criterion for assessment of eligibility. Nor should caste, creed or community a person belongs to, the language or languages that he may speak, should make any difference to selection of the right candidate. Let us concentrate all our effort to recruit to the medical profession those who are likely, first and foremost, to be worthy and useful citizens ; and only next as people who by their special training and knowledge are able to put into use those skills to prevent disease and relieve suffering.

# The Present Day System of Teaching Pathology in Medical Colleges

*By*

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THE purpose of this short article is to examine in the light of experience whether the present-day system of teaching Pathology in our Medical Colleges imparts to the student a correct appreciation of this crucial subject, keeping in view that the main objective of Under-graduate Medical Study is not the creation of specialists but of efficient general practitioners. At present Pathology (including Bacteriology) is taught in our Medical Colleges by specialists who have no collateral work in the attached Hospitals and very little contact with patients. Teaching is conducted mainly in class-room lectures with the aid of museum specimens and around the *post-mortem* table whenever possible. Many years of experience in the teaching of Pathology makes me doubt the efficiency of this system. Museum specimens very often represent only ultimate burnt up aspects of the disease and cannot convey to the students the full significance of the active continuous process that is going on in the patient. *The right place for teaching Pathology is the Hospital* and not the class-room. It has to be taught in the wards by the bed-side of the patient and correlated to the progressive and retrogressive changes that is being manifested in him. Gradually the student will be trained to think in terms of Pathology and develop a mental altitude which always tries to visualise the process that is going on beneath the surface, and to interpret and explain the signs and symptoms in terms of that process. He will thus realise that Pathology is not a subject to be studied and overcome as an inevitable hurdle in the course of Medical Study—that he cannot separate Pathology from Medicine, Surgery and Midwifery and so long as he practises the art and science of Medicine he will be always learning it. Thus Pathology will lose "its present remoteness and take its rightful place in moulding the students' attitude to Medicine".

Another point which merits our consideration is whether the specialist—the pure Pathologist—is the right type of a teacher to train Medical Graduates who are intended to be general practitioners. It must be admitted that the outlook of the Pathologist, is different from that of a practising Doctor. The former approaches the study of Pathology as an end and aim in itself and very often he is engrossed and lost in its never ending problems, and this altitude naturally colours his teaching—the stress and importance he gives to the various aspects of the subject. It is the common experience of many examiners to come across students who can repeat verbatum practically everything about the Typhoid bacillus, its morphological and cultural characteristics, sugar reactions and antigenic structure; but who are ignorant where to look for the bacillus in the course of Typhoid fever, or how much blood to be taken for culture. The centre of attention is so much focussed on the absolute study of the bacillus that its intimate relationship with the disease produced by it gets only a secondary place. For the general practitioner the latter information is all important while the growth pecularities of the bacillus he can well afford to forget.

The same applies to the study of lesions in disease processes stress and importance are given from the Pathologists point of view and not from that of the practising Surgeon or Physician. To the former a minute histological study of a lesion is all important, for his reports and diagnosis depend on a detailed microscopic examination, but to the surgeon or physician it is the naked eye characteristics—the colour, feel and consistency—that will guide him in a diagnosis. The difference in outlook is evident in the teaching of the students who are taught more about the minute histological details of a lesion and comparatively little

about the naked eye characteristics. Many students who can give delightful microscopic descriptions of a gastric ulcer from the mucus surface—the necrotic and dead granulation tissue, the living granulation tissue and the fibrotic layer will be surprised and bewildered if he is asked for any difference in the feel of the stomach wall at the ulcerated area from the peritonial aspect. *I feel it would be advantageous and more to the benefit of the students if Pathology is taught by Professors who have collateral work in the attached Hospitals.* This applies not only to Pathology but to all the present Non-clinical Medical Subjects—Anatomy, Physiology, Pharmacology and Biochemistry. At present the constant complaint against these subjects is their tendency to break loose from Medicine and develop an autonomous and independent growth. This is bound to happen as Non-Clinical Professors having no contact with patients gradually cease to be doctors, get engrossed in their own subjects and teach them to the students as though they are an end in themselves. There is nothing to make them realise that the central objective of the whole course of Medical Study is an understanding and cure of disease processes and every subject taught is ancillary and contributory to this cause. Only a contact with disease processes and patients in the ward will produce this change in altitude and outlook and bring about a coherence and inter dependence of all the subjects that a Medical student is taught.

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# Place of Neurology and Neurosurgery in Teaching of Medical Students

*By*

B. RAMAMURTHI, M.S., F.R.C.S. (E),
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THE final aim in teaching medical students must be clearly borne in mind in discussing their curriculum. Much controversy has taken place during the recent years regarding this; it is fairly clearly understood that the content of undergraduate medical education should be such as to produce a basic doctor—one with a fairly general idea of diseases and their causation, their treatment and prognosis. In teaching students to produce such a basic doctor, the place of neurology is along with general medicine. The teaching of a speciality for the under-graduates must be done always against the background of general medicine or surgery so that the students will get a fairly clear perspective of the various branches of medicine.

The teaching of Neurology actually starts even during the first year of medical education along with the teaching of anatomy and physiology and as far as possible attempts must be made to teach both anatomy and physiology of the nervous system at the same time in the two departments of Anatomy and Physiology. This is essential for the student to get a correlated picture of the structure and function of the nervous system.

Unfortunately, a false idea that neurology is a difficult subject is fostered in the minds of medical students and young doctors from the very beginning. This is probably because too many details are taught during the under-graduate stage so that the student forgets the basic fundamental. To avoid this, it is very essential to teach students fundamental basic facts in the structure and functions of the nervous system, in as simple a term as possible without confusing the student with too many proper names and nomenclature.

The same procedure must be followed during the course of clinical instruction so that the student gets a clear grasp of what happens to the functions of the nervous system when there is alteration in the structures. When he grasps this knowledge, it will be easy for him to deduce the various clinical picture for himself and such a method helps to develop the thinking and reasoning powers of the student and makes every neurological problem a delightful mental exercise. The method of teaching neurology, disease by disease, or syndrome by syndrome must be minimised as much as possible in the under-graduate stage except for rare instances. Specially the habit of making the student study diseases by memorising syndromes and proper names must be thoroughly discouraged. By this the student will be able to properly orientate himself in the field of neurology, so that as a doctor later on he will not be scared of examining or treating neurological conditions, and he will also understand and realise that Neurology is not a separate unsurmountably difficult realm of medicine, but part and parcel of general medicine.

The same holds good for Neuro-Surgery also. The fundamental basic principles and an idea of what progress is being made in surgery of nervous system must be given to the under-graduate. This is best done along with general surgery. The details of investigations and surgical treatment of nervous diseases must be left to the post-graduates who wants to specialise in the subject. The teachers (clinical and pre-clinical) who undertake teaching of neurology for medical students must make sure that at the end of their teaching the student has a clear idea of the basic concepts in neurology and they must be proud if their students can say that they are not afraid of thinking in terms of neurology, and feel that they are not scared of dealing with neurological problems during the course of their career as medical men seeking to give relief to mankind.

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# The Teaching of Under-Graduate Physiology

*By*

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PHYSIOLOGISTS everywhere in our country have not failed to take note of the enormous growth of the subject in recent years and have felt as those in the Western countries did, the necessity for reorientation of teaching in this important subject, though objectively no significant changes have been so far introduced. The Indian Medical Council, the Physiological Society of India, the Universities and the Medical Departments of the various States and the Central Government had tackled the question of medical education not too successfully with regard to physiology. Some of the important recommendations of foreign experts who visited the medical colleges in India have been more or less completely shelved by the State Governments with the result that teachers of this subject who are sensitively conscious of the need for changes are disappointed or even depressed, being faced with the heavy burden of making the under-graduates fit for clinical courses in a short span of one and half years with about thirteen months of actual teaching. It is a trial with little redemption or credit owing to the large number of failures among students in this subject.

In the brief space available a bear outline of some important desiderata in the teaching of physiology will be given ; some which are widely understood are omitted and a few are left out purely on grounds of prestige.

1. *Language.* The poor understanding of the subject by many undergraduates is mostly referable to the low standard in English prevailing since about a decade owing in its turn to the bogey of dying vernaculars to which the State Education Departments and even the Universities fell victim. The necessity of recognising English as the *Lingua Franca* with regarding to the teaching and progress of sciences and the necessity of maintaining high standards in English starting from schools cannot be over-emphasized.

2. *Teaching.* The old method of teaching from the text-book—a mere repetition of facts and figures—should be substituted by the rational method of imparting the principles of physiology invariably with their clinical application. The following methods are suggested :

(*a*) At least one out of every four lectures should be given with the aid of the epidioscope, projection of slides etc. making use of diagrams and photographs from text-books of physiology, clinical medicine and histology etc. as a survey covering the topics in regular lectures.

(*b*) More and more teaching as class lectures must be diverted as lecture demonstrations with the aid of animal experiments. Though this was recognised little headway had been made in this country in this direction for certain reasons.

(*c*) Demonstration of simple clinical cases will greatly impress the student whose natural tendency is to mugging the subject purely with the view of passing an examination.

(*d*) The stressing of fundamental principles must be an important guiding factor to the teacher who is otherwise habituated to deal with every thing under the sun of curriculum and finish before setting time.

(*e*) Projection of Films on the functions of the various systems of the body under normal, experimental or diseased conditions. Besides the visual aids mentioned under

(e) this will help the student a good deal in grasping the principles of pure and applied physiology. Every attention should be paid to developing this branch of teaching. At present scientific films are shown sporadically and they are mostly those of advertising firms.

(f) Promotion of simple discussions and symposia on topics relating to the students' immediate study.

3. *Laboratory Training.* The importance of laboratory training in human physiology was recognised early in Western countries where fully equipped laboratories have been brought into use besides those designed for animal experiments. Three laboratories are required for the under-graduates viz. amphibian physiology, human physiology and mammalian physiology. There is a shift of importance from the first to the other two in recent years though the former cannot be left out. Laboratories specially designed for human experimental physiology must be set-up in this country. It may be noted that climatological and racial physiology is little developed in the tropics. We are too much inclined to accept the physiological standards given in western text-books—not too correct for our clinical application.

4. *Course of Study.* While a two-year course is ideal the subject can be taught in one and half years if too much emphasis is not laid on teaching everything under the curriculum or if the curriculum is so modified as to suit the changed methods in medical education, the latter being the better. The present chaotic state following reduction of the course of study should no longer be allowed to continue.

5. *Examination.* Three types of examination is too much for the under-graduates and the practical tests can be scrapped to come into line with most western institutions. Marks may be allotted for a certified laboratory record of work done by the student.


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# The Value of Ophthalmology in the Teaching of a Medical Student

*By*

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THE Genesis of Modern Ophthalmology in India as a special branch of modern medicine followed upon its origin in London. The earliest special hospital treating only diseases of the eye was opened in London in 1804 and is now known as the Moorfields. We can proudly claim that our Government Ophthalmic Hospital, Egmore was the third specialist eye hospital to be opened in the world and was functioning as such as early as 1819.

Under-graduate teaching of Ophthalmology came into vogue in the beginning of this century and has been continued upto the present period. The teaching lays the main emphasis on those diseases that the general practitioner will be called upon to treat. The text-book which the medical student uses during his University course serves him later when he takes up his work as a general practitioner. He is at home in it and knows exactly how to find what he needs. Each page greets him as an old friend and brings to mind the cases he has seen demonstrated in the clinical classes. For this reason the need for the student to buy and possess the best text-book is emphasized.

No other country can boast of so much clinical material for teaching both the under-graduates and post-graduates, as our own. The very vastness of the material on which our teaching is founded has many advantages. The diagnosis and treatment of diseases of the eye has become quite easy to the under-graduate, as so many varieties of the same disease can be demonstrated to him at a time. It is for the teacher to properly separate the important from unimportant facts. The value of this vast experience gained in the out-patient departments of our hospitals, even if only partly imbibed is of great value and will augment the best text-book.

Ophthalmology is closely associated with the basic principles of medical science in general. The eye is linked not only with adjacent structures but also with remote parts of the body. The Ophthalmologist has come to stay and he has a definite place not only in the teaching of his own speciality but also in the teaching of other branches of medicine. The ophthalmoscope has revealed facts which have helped in the diagnosis and prognosis of cases of hypertension, diabetes, arteriosclerosis and diseases of the kidney. The value of a fundus examination in Toxaemias of Pregnancy cannot be sufficiently emphasized.

Cushing appears to be the first to appreciate fully the value of routine quantitative perimetry in the clinical investigation of brain lesions. The wide extent of the Intracranial visual pathways and their consequent liability to involvement in many cases of intracranial disease has made perimetry an integral part of Neurologists routine of investigations. The site and form of a defect in the field of vision furnish clear evidence of the fibres involved, the exact or approximate level of the lesion. The perimetric information has to be considered with other clinical facts.

The study of the pupillary reactions offers considerable help to the neurologist. The widespread ramifications of the pupillary pathways both within the central nervous system and the sympathetic system associate them with many different disorders. The ease and accuracy of the examination of the pupillary reflexes afford unusual opportunities for early differential diagnosis.

Ocular movements help in localization of intracranial lesions. The nerves supplying the oculomotor system may be affected anywhere in their course inside the cranium and according to the type of paresis of the

Extraocular muscles the lesion may be located.

The routine of clinical examination, which is easy to follow in examining an eye disease has been of great use to students in their routine examinations of clinical cases in other branches of medicine.

The Ophthalmoscope and the Slit-lamp microscope have given us means to examine living tissues at great depths and great magnifications. This has helped research to be carried on very well on the effects of new drugs and techniques. Corneal grafting has paved the way for research into the grafting of other tissues from cadavers. The experience of the Ophthalmologist with inorganic grafts into human tissues has also enriched other branches of medicine.

Ophthalmology has certainly a definite basic values to the medical student in his pursuit of medical knowledge.

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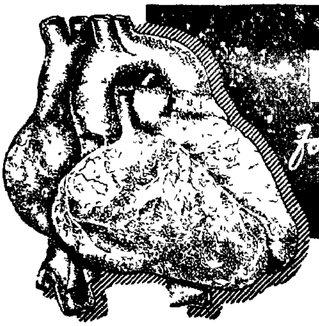

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# The Value of Forensic Medicine (including Toxicology) in the Teaching of Medical Students

*By*

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ACCORDING to a definition given by Certel, Forensic Medicine (Legal Medicine) is the application of Medical Knowledge to the needs of Law or Justice. This definition embraces, not only criminal law, but the application to all kinds of insurance (life and accident), employee's compensation acts, soldiers' rehabilitations and other civil procedures. A second, rarer definition applies the term to the social and legal position and relations of the physician himself, that is, his rights, duties, obligations and responsibilities to the community and to his fellow practitioners and how the law of the country affects him in the pursuit of his professional practice.

It is clear from the above definitions, that instruction in the subject in Medical colleges is essential to make the students fit for their later work. Firstly, even the general independent practitioner cannot avoid contact with the law and "every doctor must know what to do with a dead body, how to certify death and certify for cremation, when to ask for the assistance of the Police and how to collaborate with the law in the best interest of the public and he cannot afford to be ignorant of the law on poisons, abortion, or infanticide or of his own legal and moral obligations in practice. These are things on which he must have detailed instruction as much for his own as for general security." Secondly, there must be provision to give more detailed instruction in the practical aspect of the subject to the medical student who wishes to join after graduation the State Medical Service in which capacity, he cannot escape medicolegal work of great responsibility, like issuing wound certificates, examining victims of rape, determining age, medical investigation of dead persons and psychiatric study of living persons in the interests of judicial administration. Thirdly, there must be provision for giving instruction in Forensic Medicine of a much advanced degree to the graduates in medicine, to equip them for careers in Forensic Medicine.

Under-graduate instruction in Forensic Medicine can afford to be elementary in the United Kingdom or the United States where conditions are very different. Medicolegal work is not forcibly thrust on the shoulders of untrained medical officers in those places and there are ample facilities for getting special post-graduate training for those who have to take up heavy responsibilities. But in our State, the academic planners have to reckon with three factors: (1) the persons employed in our State Medical Service are being compelled to undertake the most onerous responsibilities in regard to Forensic Medicine without any special training after their graduation, (2) there is no medicolegal institute or any other centre to give special training to the graduates in Medico-legal work, (while practically every country in Western Europe has a medicolegal Institute or some similar organisation), (3) it is not practicable to get a second opinion even in difficult cases, as most of the opinions and reports on perhaps the most complicated cases have to be made without any delay and even if there is some time, there are no specialists who can be consulted even in the District Headquarters not to mention the smaller places. With the revised regulations of the Madras University, the under-graduate instruction in Forensic Medicine has necessarily become more ele-

mentary than before and if medicolegal work of the State is to reach the minimum standard of efficiency, compulsory practical training in a suitable Forensic Centre has to be provided for these medical graduates who are recruited to the State Medical Service.

"Legal medicine, looked on as an important subdivision of medical science cannot attain its fullest development unless it is made a field for teaching and research by the University. The two aspects of legal medicine, the practical and the educational, are dependent on each other. Legal medicine as a science of practical application in the administration of justice needs the stimulus and guidance of legal medicine as a University discipline and the latter needs the material and problems of the former for instruction and investigation."

Society, in the administration of Criminal justice is entitled to the best medical service obtainable.

Bhore Committee report says :

"A faulty opinion in ordinary medical case may be of some inconvenience to the patient ; but a faulty opinion in medicolegal matters, may do permanent damage to a person's reputation and may endanger his liberty and even his life."

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# The Place of Radiology in the Under-Graduate Teaching in Medical Colleges

*By*

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THE speciality of medical Radiology has a definite and enduring place in the teaching of medical students. "The Radiologic point of view in Medical diagnosis embodies appreciation of the principle that functionally as well as morphologically, the tissues and organs which comprise the human body can be investigated in Situ and the status of these structures can be expressed coherently in terms of relative density to a beam of X-rays." Medical Radiology is more than a clinical speciality. It looms rather as a philosophy of medicine, a particular point of view to be employed advantageously in the attack on almost every conceivable problem encountered in the practice of medicine. Whether as a practicing medical man or as a budding medical student, one cannot escape the influence of medical radiology in his thought or reasoning, no matter in what direction his particular interest may take him. There is no branch of healing art in which radiology cannot be utilised most advantageously. Earliest lesions as Kock's infection are seen in the lungs long before it is heard. An ulcer nitch in the stomach or duodenum is the surest way of diagnosis of this malady. Neoplasam in the gastro intestinal tract or Bronchi show radiological manifestations earlier than clinical signs and symptoms. From the early diagnosis of pregnancy to doubtful cases of cephalo-pelvic disproportion, Radiology plays a definite role in answering the problems of the obstetrician. For congenital heart lesions requiring surgical aid Radiology (angicardiography and cardiac catherisation) plays a decisive role. In the treatment of malignant diseases and certain non-malignant conditions the value of therapeutic Radiology can hardly be exaggerated.

In the preventive medicine, mass miniature radiography is a valuable weapon in detecting early tuberculosis in the general population. Being such an important branch of medicine, it goes without saying, that the under-graduate must be given a thorough and firm grounding in the fundamental principles of the different branches of Radiology. It is the under-graduate of to-day that becomes the general practitioner of to-morrow. Those who chose to become specialists will get additional training in Radiology with particular reference to their specialities. But the general practitioner who is the back-bone of medical relief gets his only training in Radiology during his under-graduate course and as such he must be well-taught the fundamentals of Radio diagnosis and the elements of Radio theraphy. In the villages, for a long time to come it may not be possible to have the luxury of separate general practitioner and specialists. The general practitioner must be able to interpret correctly important diseases in a Radiograph as well as to diagnose early malignant disease so that they can be sent to bigger institutions for further radiographic investigations if necessary early treatment. Radiology must be classed as a major subject in under-graduate studies and must be under the care of a Professor in all Medical Colleges. All the teaching hospitals must be fully equipped with Radio diagnostic as well as Radio therapeutic apparatus and well staffed. What is wanted is decentralisation and not over centralisation of Radiological facilities. I regret to say that sufficient importance to the teaching of Radiology to the under-graduate in our medical colleges. Being a non-examination subject, the medical students may often do not pay sufficient attention to the lecture demonstrations conducted in the Radiology classes. They attach more importance to the face presentation to the teachers on examination subjects and will rather learn rudimentary Radiology from those whose main specialisation or interest is not radiology, than get benefit from the lectures and demonstrations held under the auspicies of the Radiology department. Moreover extra curricular activities engage a good deal of the time of the present medi-

cal under-graduate. With the result that many of the graduates in medicine of to-day are woefully lacking knowledge in the fundamentals of Radio diagnosis and Radio theraphy. This unfortunate state of affairs can be checked if a little more attention is paid by the authorities in the under-graduate training in Radiology in our medical colleges. I know that it is next to impossibility to have a university examination in every speciality for the under-graduate. But at the end of the scheduled course in this speciality, a practical and oral examination must be held of the head of these special department. If a minimum standard and knowledge in the speciality is not attained by the student he or she must not be allowed to sit for the final university examination unless he or she puts another course and attain the required standard. Minimum standard of knowledge in specialities and not mere attendance to the classes that must be put down as the criterion to enable to become a medical graduate.

In the medical schools or colleges in U.K., Continent of Europe and U.S.A., sufficient importance is given to the teaching of Radiology from the very first year of Medical studies itself. In Harward Medical School (Boston Massachusests) in the first half-year of medical studies one hour a week is devoted to the teaching of Radiological anatomy. In the second year demonstrations of fluroscopy in physical diagnosis (mostly in normal individuals) is done for one hour a week. In the third year of medical studies, 7 clinics and 3 lectures of each one hour duration is given to medical students. In the fourth year, students spend the whole of one month (election month) in the Radiology department of one of the teaching hospitals.

Dr. Maclean Director of Radio Diagnostic Department, St. Thomas Hospital and Professor of Radio Diagnosis, St. Thomas Hospital Medical School, London, adopts the following procedure in teaching Radiology to the under-graduates.

During the pre-clinical course after the dissection of a particular section is completed, a lecture demonstration of the Radiological anatomy of the part is given *e.g.* in abdomen Radiological anatomy of the gall-bladder, kidneys, liver and spleen etc., is demonstrated in radiographs followed by a fluroscopic demonstration as Barium meal fluroscopy of the normal gastro-intestinal system. These demonstrations are done for groups of eight students. In this way the different systems of the human body is covered during the pre-clinical course.

During the hospital course (clinical period) junior students can attend for one hour from 9-30 a.m., routine reporting of films when normal X-ray appearances and procedures for special examination of G.B, I.V.P. etc., will be explained and fluroscopy done for groups of 8 students. For one hour from 1-30 p.m., senior students can attend reporting sessions. Attendance for these reporting sessions is not compulsory.

Eighteen lecture demonstrations in Radiology, once a week in the morning, 6 times a turn for 3 terms are conducted for final year M.B., B.S. students with the demonstration of typical radiographs and demonstration of epidioscopic slides. Attendance is compulsory for these lecture demonstrations.

I suggest the following scheme for the teaching of Radiology for our Undergraduates in our medical colleges.

During the pre-clinical studies, 6 lecture demonstrations on the normal Radiological anatomy of different systems of the human body, and 3 fluroscopic sessions in the normal working of the human body must be arranged for groups of ten students in the Radiological departments of the teaching hospitals under the direction of the Professor of Radiology of the particular medical college.

During the clinical training, in their final year M.B. and B.S. course, they must be posted for 2 weeks to the Radiology department during their surgical postings, and another two weeks to the Radiology department during their medical postings for 3 hours a day from 9 to 12 noon. During these postings students will spend 1½ hours each day with routine reporting on fluroscopy, while the other 1½ hours will be devoted to lecture demonstrations with radiographs and epidioscopic projections of slides

and demonstration of Theraphy cases. During these postings at least 12 lecture demonstrations must be on Radio diagnosis and 6 lecture demonstrations on elements of Radio and Electro theraphy. At the end of these postings, the head of the Radiology department will hold an oral and a practical examination and those students who do not show a minimum elementary standard of knowledge will be required to put an additional course before they are allowed to sit for the final degree examination.

In the modern settings Radiology is becoming more and more a clinical speciality. The Radiologist is supplied with all clinical and laboratory findings and when necessary he also examines the case clinically himself before he advises what all radiological investigations are necessary. The radiological interpretation of films is done only finally so that it may be of maximum benefit to the clinician in his final diagnosis and treatment. In the West questions in Radiology are put with a clinical bias as :

(1) A woman, aged 45, with jaundice and pain on the right side of the abdomen is sent to you for Radiological investigation and diagnosis. What all Radiological investigations you will do and how will you come to a diagnosis from these findings ?

Or

(2) A male, aged 60, suffering from Bronchial Neuralgia is sent to you the Radiologist by the clinician. How will you investigate the case and aid the clinician to come to a diagnosis ?

Thus with a little more care on the part of the teacher and the taught and with some modification in the line of approach and the syllabus Radiology can be put in its right and proper place in the modern undergraduate teaching of medicine.

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# The Place of Dermatology in the Teaching of a Medical Student

*By*

S. RAJAGOPALAN, L.M.S. (Mad.), F.D.S. (Lond.),

*Dermatologist, Stanley Hospital, Madras.*

DERMATOLOGY always had a place in the Medical Curriculum. But its importance was not realised as much as it should have been. It always had to squeeze in edgewise to get to its legitimate seat. Now, in the present set of things, the necessity of a Medical student getting conversant with Dermatological Medicine is, if not essential, inevitable.

Dermatology, the vast section of Medical Science that it is, has stepped into the arena rather late. It has a very big future, but it is going to take some time before it could include in its vast tentacles a good bit of medicine—(Social and otherwise)—, Surgery and Psychiatry.

I always told my students—that the Dermatologist in their hay-days will be a very big man—(with no offence to anybody), he will be bigger than the Surgeon and the Physician. That will be about twenty or twenty-five years later. If I was living then, and still was capable of seeing, I would very much like to read for myself a few cures achieved by them for a few conditions, for which we have been dabbling in treatment, and actually aged in the desperate search for the cure.

Dermatology is now treated casually, more a step-motherly treatment. The potential nature of the Science, with its great scope for expansion, is not realised; or if realised the realisation is not manifest. How do we draw out the potentiality unless we spend a lot of time and do elaborate investigations wherever possible. A skin case, if you wanted to know all aspects of it, needs a very wide approach, which means more facility, more personnel and more time. It is regrettable that this is not realised.

The trouble about Dermatology is that it is benign to life. That explains very often the casualness of the approach. According to the common man, what is skin trouble? To be put in a nut shell, it is "Itching". You need not have to go far for the most economic remedy which is always within your reach—"Scratching". Itching—Scratch—No Itching—Well then, there is no need for the Dermatologist.

One morning, I went into a very big glass-ware shop. I asked for a set of Ice-cream glasses. He showed me two kinds, one of a very superior glass, and the other an inferior variety. I asked him, "don't they both break equally easily?" There came the answer, "YES SIR, WE LIVE ON IT!" I liked the answer immensely. What about every skin case coming to you, improved or otherwise, but always with the lonely cry—"the Itching is there?" How much the desire to give the patient the same answer as the shop-keeper did! "DERMATOLOGISTS LIVE ON IT!" The harassing symptom, Itching, if it is not there, or if it could be controlled by the patients themselves without much damage, the Dermatologists—"Enmasse" may have to close their shop.

I said Dermatology is benign to life. The importance of skin trouble comes in more acutely, when the Psychological trauma and the cosmetic disfiguration become the prominent feature of the condition. This becomes sometimes a big problem, harassing both to the patient and the doctor.

Skin conditions are more prevalent just now. Probably they were there before, but more of them now come for treatment. With the invention of new remedies and the enormously rapid rate of progress of the Antibiotics, the larger and more frequent use of Cosmetics, there is an enormous increase in the number of cases of skin Idiosyncracies. Allergy is becoming a very big problem. Anything you use as a remedy, unfortunately could cause in some people Allergic Dermatitis. The rushed living with the incessant pre-occupations, brings in a very big Psychic factor, which could cause and influence skin conditions. With such a rich field for provoking skin

ailments, it will be a big drawback, if the student of medicine is not conversant with them.

With the wider approach to the skin condition, there is more realisation of the fact that Dermatology is, in a large measure, influenced by one or other of the inner mechanisms, so much so that, Dermatology cannot be viewed entirely as a separate entity, but as very much a part of Medicine.

The Skin training must be given to the final year student, or it must be included in the curricula for all the three years—3rd, 4th and final. Giving the training in the fourth year only is wrong. They understand better about the conditions and their treatments in the final year than in the fourth year. Teaching them in the fourth year, they understand and appreciate less, and completely forget about it by the time they come to the end of the final year. They want a complete repetition of the course in the final year. Dermatology, is vague to the Dermatologist himself, and should we wonder if students find it strange and difficult to understand and remember!

The more it is realised that Dermatology is best handled by a Dermatologist, and the sooner it becomes a habit with the Physician and Surgeon and others to automatically direct any skin case to the skin man, the better it will be to the progress of Dermatology. The Dermatological Science as it is now, is such that anybody can treat a skin case, but the Dermatologist must be consulted for everything concerning his part of the Science. May I say he must be consulted *in setting skin questions* for papers, and in correcting the answers for the skin questions also? If this is done the students will devote more attention and time, and attach more importance to Dermatology, during their postings in the Skin Department.

The days are quite in sight, though the vision may be aided with Binoculars when Dermatology will be given the status and importance it rightly deserves!

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# The Historical Approach to Medicine

*By*

DOUGLAS GUTHRIE, M.A., F.R.C.S.E.,

*Lecturer on History of Medicine, University of Edinburgh.*

THE most logical approach to any field of knowledge consists in a study of its history. The student is in a position to appreciate and to understand the most recent views and the latest researches only after he has mastered the basic details, which include a consideration of the growth and development of the subject, from the earliest time to the present day.

In all the Arts, and in most of the sciences, this background of historical information is regarded as essential, but somehow in medicine it is apt to be neglected. It was not ever thus, and a brief glance at the medical and surgical text-books of, say, the eighteenth century, will convince any reader that the authors of that date were well acquainted with the lives of the early masters of medicine, and with their classic works, as well as with the varied trends which have influenced the progress of medicine since the dawn of recorded history. To-day, however, medical knowledge has become so vast, so complicated, and so technical, that the over-burdened student finds it a hard task to accomplish all that he is expected to do and to know in order that he may obtain the qualifications necessary for his career. He soon reaches the conclusion that his success as an instrument of health and healing does not appear to derive much assistance from work which is now obsolete, and he soon discovers also that a preoccupation with antiquity is of little advantage in examinations. In consequence, the modern student is apt to be deluded into concluding that the latest view is always the most correct view, and he may even come to regard medicine as almost purely a matter of technique.

## MEDICINE AS A TECHNIQUE

This outlook on medical education is fostered by many universities which have tended to become technical schools rather than cultural centres.

The materialistic tendency of modern medicine is doubtless the result of the rapid and extensive increase of knowledge which we have witnessed during the past few decades. A vast number of special branches have not only sprouted from the parent trunk, but have commenced an independent growth of their own which bears little relation either to the main stem or to the neighbouring branches.

Medicine has become medical science. "Scientific" is to-day a synonym for true, or accurate, or correct, and there is scarcely a more derogatory word than "unscientific".

The humanistic aspect of medicine, and all that constitutes "the Art", has been swallowed up in the flood of Science. In some quarters, the science of medicine is almost as impersonal as veterinary science.

## THE CONTRIBUTION OF PSYCHOLOGY

It is true that this unfortunate trend might have been counteracted by medical psychology. Psychology, as applied to medicine, might have saved the situation. But, instead of permeating all the varied branches of medicine, providing them with a common ground of interest, and thus linking them together, psychology forsook the old philosophical ideal, developed strongly along experimental and behaviourist lines, and simply added to the growing number of specialisms a new science of neuro-psychiatry. Accordingly medicine, surgery, and obstetrics, the great tripod of medicine, with its large progeny of branches and buds, is still lacking in that unity and cohesion which is essential for further progress.

How are we to prevent the centrifugal movement of the many branches of medicine, a movement which, if uncontrolled, may do great damage and delay true progress? There is one answer to the question, and it may well be the only answer.

## THE PLACE OF HISTORY IN MEDICINE

The key to present difficulties is the study of the past. In history alone can there be found a meeting place for all the different departments of medicine. Nevertheless, the history of medicine which can accomplish this integrating function must not be a mere collection of facts. It is true that the lives of the pioneers are inspiring, that their discoveries are stimulating, and that many of their writings are still worth reading. But our problem of achieving the reunion of medicine can be solved only by providing a new outlook or philosophy as an alternative to the scientific materialism of the present day. Art as well as Science must find a place in medicine, the humanistic side must be cultivated, and medicine must be given a philosophical trend. It is difficult to put into words exactly what is meant by the art of medicine ; it is still more difficult to define the philosophy of medicine. Perhaps Sydenham was nearest to the truth when he stated that "the art of Medicine is to be properly learned only from its practice and exercise". Here, indeed, was something which no book could teach and which no lecture could explain ; it could be acquired only by experience. As every patient knows, there is a subtle power in the medical practitioner, a healing and beneficial influence which is quite independent of medical knowledge and which cannot be satisfactorily accounted for in terms of modern psychology.

## THE HIPPOCRATIC IDEAL

Hippocrates possessed this knowledge in high degree, but for him it was no mystery but simply the common sense view. It was Hippocrates who shook medicine free from the control of the supernatural and from the domination of magic, and who showed that all diseases arose from natural causes.

During the seventeenth century when medical men, Iatro-physicists, and Iatro-chemists were seeking to explain all the processes of the human body, in health and disease, in terms of physics and chemistry, Sydenham came on the scene and advised a return to the methods of Hippocrates. In the following century William Cullen, perhaps the greatest physician after Boerhaave, was wont to preface his lectures by the remark: "It shall be my endeavour to make you philosophers as well as physicians".

The attributes of a good doctor do not change ; they remain the same to-day as in the time of Hippocrates, of Sydenham, and of Cullen. It seems unfortunate that the best of such men dies with them, as it is of such a nature that it cannot be transmitted in writing. To a certain extent it may be passed on by example, and that is why the old-fashioned system of apprenticeship was such a sound part of medical education, and one which might well be revived to-day.

The history of medicine may supply to modern medicine the elements of art and of philosophy which are as necessary as science to the full development of all that concerns health and healing. Professor Trevelyan had said of history : "It is the cement that holds together all the studies relating to the nature and achievements of man". Thus he envisages history, not as a separate subject, but as a part of many subjects which concern man. And surely medicine is the most intimately human of them all. Thus history is an essential and integral part of medicine, the cement which binds all the various specialities together. Obviously the need for an historical background to medical study was never greater than it is to-day.

## AN APOLOGY FOR MEDICAL HISTORY

A knowledge of the history of medicine adds considerably to the interest of medical studies. As a mere aid to memory it may be valuable. The student becomes more keenly interested in various anatomical structures if he knows something about the anatomists whose names are linked to those structures—Eustachius, Fallopius, Sylvius, Monro, Bell, Highmore, and many another. It seems a pity that such names are no longer favoured by those who insist that the name must describe the structure. "Pharyngotympanic tube" may be more descriptive, but it is much less romantic than "Eustachian tube". The interest in history thus becomes a useful interest.

Of course the crude methods of our medical ancestors, their elaborate prescriptions, their curious ideas of pathology, were often fantastic and sometimes amusing. It is easy for us to deride them, but we should recollect the times in which they lived and the lack of all that knowledge and equipment which adds so much to the effectiveness of modern medicine. There is little excuse for the author who introduces his subject by a derogatory or jocular reference to the old-time view or old-fashioned treatment. History must be poor stuff if it can furnish only a sort of sugar-coating to the bitter pill of medical learning, merely a relief from the figures and tests and reactions which strain the memory of the student of to-day.

## PIONEERS EXPLAIN THEIR METHODS

Medical history also serves the stimulating purpose of demonstrating to us the methods of those who have made great discoveries. William Harvey's little treatise of 72 pages, "On the movement of the heart and blood in animals" (1628), was truly epoch making. It should be read by every medical man, as it is a model of observation and reasoning for all subsequent investigations. More than two centuries later, in 1865, which was also the year of Lister's great discovery, there appeared the book in which Claude Bernard analysed his own methods of research. His "Introduction to the Study of Experimental Medicine" is one of the greatest of medical classics ; a wonderful analysis of the principles upon which research should be conducted. Claude Bernard signed the death warrant of the "systems" which in varying forms had guided the destinies of medicine for centuries. "Systems", said Bernard, "do not exist in Nature but only in men's minds". Other works of earlier or later date might be mentioned, but those of Harvey and of Bernard will suffice as examples of the value of medical history as a guide to research.

## LESSONS FROM THE PAST

Lastly, if any further argument is required in favour of the study of history in medicine, let it be the most obvious one of all, namely, that one must know the foundations upon which one builds. "The older the world grows", wrote August Comte, "the more the living are indebted to the dead". No student of epidemiology can afford to be ignorant of the Plague of Justinian, or the Black Death, or of the means by which Edward Jenner arrived at his discovery of vaccination. The surgeon must know who were the patron saints of surgery, what Ambroise Pare discovered, how the operation of lithotomy developed, and what was the early history of antiseptics and of anæsthetics.

The physician must have a nodding acquaintance with the aphorisms of Hippocrates, must have his own views regarding the debated place of Paracelsus in medicine, must know how and by whom auscultation and percussion were discovered, and must have some acquaintance with the lives and work of such men as Lettsom, Bright, Paget, and others. Naturally the obstetrician must be familiar with the tragic history of puerperal fever and the strange story of the discovery of obstetric forceps.

Bacteriology has its own history, and many a medical student has been fascinated by the life of Louis Pasteur, and so it is with other departments of medical knowledge. Such arguments in favour of historical study are too familiar to demand any further elaboration.

The history of medicine, then, is of value as a link between the various branches and aspects of medicine, as a means of enhancing interest in modern medicine, as a guide to methods of research, and as a cultural and essential basis of present-day knowledge.

## HISTORY IN MEDICAL EDUCATION

And now, having stated some of the more obvious arguments in favour of the study of the history of medicine, and (let us hope) having convinced the reader that such study is an essential part of medical education, let us discuss the best means of including the history of medicine in a curriculum already grossly overloaded. There are three methods of dealing with the problem :

1. By instituting a lectureship or department of history of medicine.

2. By occasional lectures or groups of lectures by members of staff and others.

3. By introducing historical material into the existing courses.

No one could argue very successfully in favour of the compulsory addition of this subject ; nor would anyone desire to include it in any examination. The course, if a course is provided, should be free and optional. The words "if a course is provided" are intended to indicate the meagre opportunities which exist at present. Before the war there was at least one chair of medical history in each of the leading Continental countries. In America there were, and are, many ; in Latin America as well as in the United States. So far as the writer is aware, only two Universities in this country, Sheffield and Edinburgh, provide regular courses of instruction in the history of medicine. In other universities there may be professors or lecturers who introduce some historical details into their courses on medicine, surgery, etc., but everyone is not historically minded and the question is left to individual preference. There can be no doubt that the history of medicine is best taught as a separate subject, although in close collaboration with all the other departments of study. The institution of a chair or lectureship is the ideal solution to the problem, and the time may come when every university will have its department of the history of medicine, which might be combined, with great mutual advantage, with a department of the history of science. The holder of the appointment would not merely hold annual courses of lectures ; he would encourage and assist local research, and would advise the university in such matters as centenaries, early books and portraits, the history of the medical school, and so on. It would thus become a whole-time appointment in every sense of the term.

## A NATIONAL INSTITUTE OF MEDICAL HISTORY

Furthermore, each country ought to have an Institute for the History of Medicine, which would not only serve as a central meeting place for the medical historians of the various universities throughout the country, but would also provide assistance and guidance for research workers. It need hardly be remarked that the history of medicine offers a vast field for investigation. From such an institute there might be issued a periodical devoted to the subject. Three such periodicals appear regularly in the United States. Britain produces not a single one, although the leading medical journals publish notes or papers on the subject and do everything in their power to encourage its study.

## LECTURES AS A STIMULUS TO INTEREST IN HISTORY

To revert for a moment to the question of lectures, it is not suggested that a full-length course of fifty or a hundred lectures should be given. Although the whole story might be told in this fashion it would tend to become tiresome and boring, even in the most capable hands, and in any case such intensive study would appeal only to a limited number of students. A much better plan is the provision of an annual or biennial course of ten or twelve lectures, which would not cover the entire field but would consist of a series of cross-sections of various epochs in the history of medicine. There might also be introduced into such a course a lecture on the work of one pioneer such as Galen or Pare or Lister ; on one disease or on a group of diseases, such as tropical diseases, or the great epidemic diseases of history. Another field which might provide a profitable lecture is to be found in the Medical Classics ; how they came to be written, and their value in modern medicine. Prominence would naturally be given to local history, as every student is interested in the rise and progress of his own school.

The choice of subjects for a short series of lectures along the above lines is infinite. There would be a change of programme each year, so that the student for whom history has a special appeal might profitably attend the course on two occasions ; during the first year, and during the final year. If the student finds that he can attend only one course, then he should attend history of medicine lectures during the first or second year, as there could be no more suitable introduction to his medical studies. The main object of lectures on the history of medicine should be to stimulate interest, so

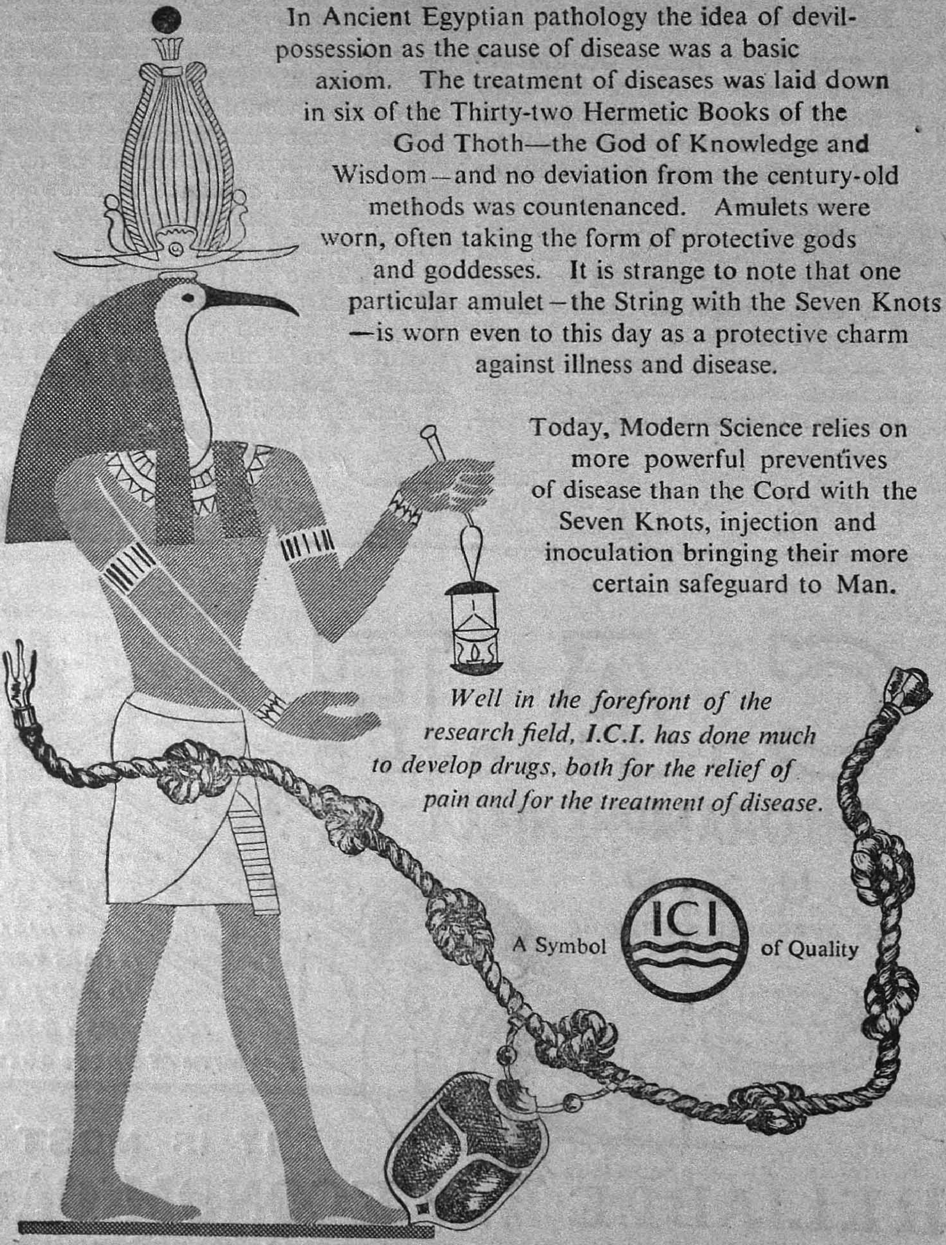
that the student may find it attractive to pursue further historical investigation for himself.

## THE PRESENT POSITION OF MEDICAL HISTORY

Some time may elapse before all universities and medical schools realise the need for a Department of Medical History, and, in any case, at the present time it might be difficult to find a sufficient number of historians to meet the need. A boom in the history of medicine is a very remote possibility; indeed, it appears likely that for some years at least the subject will continue to fight for a bare recognition, and that it will attract only enthusiasts. In the meantime, however, interest in medical history may be stimulated and fostered by occasional lectures or brief courses of lectures. In every medical school there may be found someone who is able and willing to approach his own subject from the historical aspect or even to add to his course of lectures on medicine or surgery or other subject some facts relating to its past history. So keen an interest in history would be stimulated by this means that the need for a full-time lectureship would soon be felt. Be that as it may, some tuition in the history of medicine, however slight, should be available for every medical student. A knowledge of the past is the surest guide to the future. History should be one of the "basic studies" of which we hear so much to-day. Above all, it must be realised that history is an integral part of medicine; not merely a pastime for senile doctors; or an odd and amusing method of emphasising the wonders of modern healing.

*(By courtesy of the B.M.S.J.)*

# *the seven knots of Thoth*



In Ancient Egyptian pathology the idea of devil-possession as the cause of disease was a basic axiom. The treatment of diseases was laid down in six of the Thirty-two Hermetic Books of the God Thoth—the God of Knowledge and Wisdom—and no deviation from the century-old methods was countenanced. Amulets were worn, often taking the form of protective gods and goddesses. It is strange to note that one particular amulet—the String with the Seven Knots—is worn even to this day as a protective charm against illness and disease.

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# The Place of Nursing Techniques in Medical Education

*By*

MISS FLORENCE TAYLOR, R.N., M.SC.,

*Dean, School of Nursing, Christian Medical College, Vellore.*

IT is only in recent years that any thought has been given to the place of nursing techniques in medical education. Even now though a goodly number of medical educators give consideration to this matter they probably constitute a minority of the medical profession. For many years it has been the custom in Britain for medical students to be taught nursing techniques. Not only this but also they are assigned to practise these in the wards of the hospital for a definite period of time. It is worthy of note that Doctor Kini some years ago made a practice of having Sisters in the Stanley Hospital give some instruction and demonstrations of nursing techniques to the medical students under his charge. More recently at the Christian Medical College, Vellore and other Medical colleges a short course of six hours on principles and techniques of nursing has been introduced in the third year of the medical course, which is given by one of the senior members of the School of Nursing staff. Though of such recent origin, yet we believe it has been a real value, and hope that it will become more valuable and especially if the double hours could be given to it.

Doctors in any country on occasions are faced with the problem of instructing relatives or themselves actually doing nursing techniques and procedures. In India, doctors are likely to be faced much more frequently with these problems than are doctors in the West. This is so because of the very great shortage of nurses even greater relatively than that of doctors in India. To be able to do or to instruct others in nursing procedures the doctor needs to have more than a general academic knowledge. It is necessary that he be able to explain in detail giving precautions to be taken and hints as to methods which will be least upsetting or disconcerting to the patient.

The writer had the experience of entering a home where the doctor had just told an inexperienced untrained nurse to apply a turpentine stupe for a very ill small boy. The mother was very upset because the doctor did not know how to instruct her. It was embarrassing for the doctor and a great anxiety for the mother of the sick boy.

This is but one such incident and is not unique. Many a doctor knows what a stupe is, what an enema is and many other such procedures. They know when to order them, to do them, to give detailed instruction is quite another matter. Since the possibility of doctors in India having to do or teach some of these things is great it seems reasonable that provision be made for such learnings in the medical course.

It seems definitely that there is a place for nursing techniques in medical education. This is apparent in the fact that in some situations medical students, as in obstetrical service, and doctors in private practice have need of such skill as well as knowledge. It is evident by the fact that medical educators have realized the need and in some measure have provided for it. Such being the case it is well for us to clarify the values and benefits of nursing techniques in medical education and perhaps secure wider acceptance of the practice.

In the first place there will be specific practical benefits to the medical student and doctor as individuals. It gives an opportunity for demonstrations and practice of aseptic techniques and the handling of nursing equipment. It gives the medical student an opportunity to learn the patient's mental and physical reactions to the treatments ordered by the doctor. It gives him

some idea of the care and gentleness necessary, the details which must be known. It ensures that he will not be embarrassed by nurses or patient's relatives whom he may have to instruct or the patient for whom he may have to do the treatments. It ensures proper care for his patients when the desired nurses' services are not available.

Another aspect and perhaps a more important one is the achievement of better understanding and greater co-operation between medical students and nurses, and between doctors and nurses, and possibly the clarification of the role of the nurse and nursing techniques in the care and cure of the patient. More intimate knowledge of the nurse for the doctor's work and of the doctor for the nurse's work will lead to greater mutual respect, appreciation and co-operation. This desirable relationship will make for better care for the patient and that after all is the good of both doctors and nurses.

The values of nursing techniques in medical education to the patient, to the medical student, to the doctor, to the nurse and to the whole medical situation in which we work are already recognized to a degree and as times goes on will, it is hoped, become more and more apparent and real.


**R. S. - 51 in Essential Hypertension**

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*I. M. G., Vol. LXXXVI, No. 8 (Aug. 1951)*

Fall in blood Pressure both systolic and diastolic, was registered in all cases. In some the effect was noticed in 24 hours, while in others it took 48 to 72 hours to lower the pressure.

*I. J. M. S., Vol. 8, No. 5 (May 1954)*

Even though in some cases, the pressure had fallen over considerable figures, patients did not seem to be affected in any way.

*The Antiseptic, Vol. 51, No. II (Nov. 1954)*

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# Medical Education in Certain Western Countries

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*By*

R. VISWANATHAN, B.A., M.D., M.R.C.P. (Lond.), T.D.D. (Wales).

## I. ITALY

UNDER-GRADUATE MEDICAL EDUCATION—There are at present 21 medical schools in Italy. They are all under Government control, administered through the Ministry of Education. All professors in all the schools are recruited by open competition by the Central Government. The professors, both clinical and non-clinical, get the same grades of pay which are fixed uniformly for all Government services in Italy. The clinical professors are, in addition, allowed private practice. Clinical subjects, therefore, attract the best people. The non-clinical departments as a rule, are unpopular and the authorities find it increasingly difficult to get the proper type of men for such posts.

The system of medical education is more or less modelled on the German system. Before a student enters the medical school, he has to complete 13 years of scholastic studies. The under-graduate medical course extends over a period of 6 years.

During the first two years, the student learns physics, chemistry, biology, anatomy, genetics, physiology and general pathology. In the third and fourth years, he learns more physiology, pharmacology, clinical examination, surgical pathology, anatomy, etc. In the fifth and sixth years he undergoes courses in morbid anatomy and histology, paediatrics, medicine, surgery, obstetrics, hygiene, forensic medicine, mental diseases, venereal diseases and eye diseases, and attends corresponding clinics in the hospitals. The final examination is by thesis on a subject chosen by the student. After he passes the final examination, he undergoes six months' internship. He then has to appear for a state examination conducted in another university before he becomes eligible for registration.

There are no written examinations in any subject. During the under-graduate course, *viva voce* alone or occasionally combined with a practical examination, constitutes the system of examination adopted in all Italian medical schools. The under-graduate course is divided into three two year periods. The student usually takes examinations on the subjects studied during the first two years at the end of that period. Failed students are not allowed to study the subjects in the second two-year period, until they have passed in the first year subjects at a subsequent examination.

The larger medical schools in Italy are passing through a period of difficulties, mainly due to want of sufficient equipment and very large influx of students. It is understood that during 1950 over 660 students were admitted to the first year in the Rome Medical School. There are altogether 5,612 students studying in that school alone. This is altogether unsatisfactory as training under such circumstances is bound to be imperfect and insufficient.

*Graduate Medical Education*—The system of graduate education in Italy is on the whole satisfactory. Only a few candidates are selected for each speciality. In orthopaedics, for instance, the post-graduate students are selected by examination. Only five candidates are taken annually. They have to pay for their training. They not only work as residents in the hospital and thus gain practical experience, but also undergo set courses and lectures in general surgery, anatomy, orthopaedics and traumatology. The course extends over a period of three years. More or less similar arrangements are in existence in respect of other specialities. Post-graduate training in tuberculosis at the Carlo Forlanini Institute is decidedly of a very high standard. It also extends over a period of three years. The emphasis on gaining practical experience during the course of training as specialists is really commendable.

The system of professorship existing in Italy corresponding to *dozents* in Germany is worthy of mention. A specialist, however

experienced he may be in his speciality, cannot hold the post of a professor in a university unless he passes the professorship examination. For this purpose, he ought to have done some original work and should have been attached to a professor for some time. He will be examined not only in his speciality, but also in the art of speaking. The training of a medical teacher, therefore, receives due and deserving attention in Italy.

## II. Sweden

*Undergraduate Medical Education*—The course for medical training begins when a student has passed the 'Student Examination' which qualifies him for entrance to a university. The examination is taken in the gymnasium at the end of his scholastic career. The examination covers Swedish language, history, classical languages, two or three modern languages and elementary science. The medical course comprises 2½ to 3 years of clinical studies and 5 to 6 years of clinical training. Their first year of academic studies is devoted to anatomy, histology, neuro-anatomy and embryology. During the second year the student learns medical chemistry, physiology, and pharmacology. The next half year is devoted to general pathology and bacteriology. The pre-clinical courses consist to a great extent of practical laboratory work conducted mostly in small groups. This type of group teaching has been possible by the recent increase in teaching staff.

A preparatory course for physical diagnosis and laboratory methods is given at the beginning of the clinical period. During the next 4 or 5 years all the clinical subjects including a large number of specialities are taught. Clinical courses include daily work in wards and out-patient departments. The training is completed with a full one year of rotating internship. Examinations can be taken any time after the completion of courses in the particular subjects. The students are examined by the professors themselves in the respective subjects. The nature and type of the examination is determined by the individual professor. Ordinarily only an oral examination is conducted by the professor. There is also an assessor for each examination. There are no university examinations as are conducted in India and elsewhere. The standard of training in the Swedish medical schools is high. The buildings are modern and well equipped and highly competent teachers are employed in every school. The 8 years of training given to a doctor gives him not only an abundance of theoretical knowledge but also a good deal of practical knowledge of the different branches of medicine. Nevertheless, only about 5 per cent of annually registered doctors go directly into general practice. All the rest continue their training as interns trying to acquire knowledge and experience in specialities. Three years is the minimum period for a speciality. Owing to the need for a larger number of doctors at present, and owing to almost forbidding costs involved in the training of a doctor, Sweden is seriously considering the question of reducing the number of years of study. A sub-committee has been appointed for the purpose of revising the curriculum of studies.

There are at present three medical schools in Sweden, one in Stockholm, one in Uppsala and the other at Lund. A fourth one has just been started at Gothenburg. About 150 doctors a year graduate from these medical schools.

*Post-graduate Medical Education*—There are no post-graduate degrees and diplomas or even set courses for post-graduate medical studies in Sweden. Training in any particular speciality is obtained through internship and by attaching oneself to a particular profession. It is left to the professor to say whether a particular doctor has acquired the necessary proficiency in the speciality or not.

Though the organisation for public health, medical relief and medical education is of a high standard in Sweden the authorities are seriously considering the question of effecting a thoroughgoing reform in various directions. It is true that certain rural areas in Sweden are not satisfactorily catered for in respect of health services. There are certain districts which have anything from 5 to 10 thousand population with only one district physician. Hence the Government is devoting its attention primarily to increasing the number of medical personnel by giving training to a larger number of candidates. Sweden has now about 4,350 doctors and expects to have about 4,700 in 1960.

This number is considered inadequate if the many health and medical programmes which have been planned are to be given effect to.

### III. UNITED KINGDOM

At present the annual output of all the medical schools in Great Britain is about 2,100. This should enable the maintenance of a ratio* of one doctor to 1,400 persons. The general opinion is that the supply of doctors is adequate though the distribution is faulty. An effort is however being made to increase the output of medical schools to 2,400 graduates per year. The number of applicants for admission is five to ten times the number of seats available in the medical schools. It has been ascertained that practically all the students intend to qualify for specialist or consultant status, mainly because of the higher financial rewards. The time has come in all countries to raise the status of the general practitioner. To-day G. P. is looked down upon by the specialists. The G. P. naturally suffers from an inferiority complex in consequence. In reality, the status ought to be reversed. The general practitioner looks after the patient from start to finish. The specialist comes in only as a diagnostic or therapeutic agent. These and similar questions are engaging the serious attention of learned bodies like the British Medical Association. A committee, which was appointed by the B.M.A., has recently published its report on the status and training of the general practitioner.

Selection of medical students is entirely in the hands of the individual schools. Many of the students receive financial assistance from the Government grants to ex-service-men. No general plan of subsidy of medical students exists under the National Health Service Act or other National Agencies.

There have been no radical changes in the curricula of medical studies in medical schools during recent years. The courses in different universities are more or less governed by the requirements of the General Medical Council. According to the Medical Act, 1950, which is intended to amend the previous Medical Acts, full registration to qualified persons will not be granted without proof of experience. A certificate of experience in an approved hospital in the subjects of medicine, surgery and midwifery should be obtained by a person after passing a qualifying examination. He should be engaged in employment in any resident medical capacity in one or more approved medical institutions. Though the Act has not specified the period of residentship, it is understood that it will not be less than one year. This part of the Medical Act has not yet come into operation as the authorities are engaged in surveying the availability of the requisite number of approved medical institutions.

*Post-graduate Medical Education*—In order to co-ordinate the efforts of various medical institutions in London in the field of post-graduate medical studies, an organisation known as the British Post-graduate Medical Federation has been created and is operating under the University of London. It is financed by the University Grants Committee to the extent of about 90 per cent of its budget. The Federation has created 13 institutes of post-graduate medical training in the hospitals of London. Though the Royal Colleges also participate in the post-graduate field, they are not directly connected with the Post-graduate Medical Federation.

The British Post-graduate Medical School at Hammersmith forms an integral part of the Federation. The courses of training, consisting of lectures and demonstrations, are given periodically in the different institutes in the respective specialities. The intention of the Federation in running these courses is not to train persons primarily for any diplomas or degrees even though these courses come in handy, for such of those students who are preparing for examinations. These courses are also not intended for the training of consultants. In order that a person may be qualified for the post of a specialist or consultant in London, he should hold a number of house jobs, like junior and senior Registrars, for at least a period of five years. During this period he should obtain a post-graduate qualification in his speciality. Hence, it should be borne in mind that the courses, which are mainly theoretical in nature, given by the British Post-graduate Federation, are not calculated to make one a specialist in any particular field. If a post-graduate student from India wishes to specialise in any branch of medi-

cine, he should obtain a resident appointment in any one of the teaching hospitals if his speciality is on the clinical side, or should get the opportunity to work directly with a professor if he wants to specialise in any of the non-clinical subjects.

Under the National Health Service, organisations for post-graduate studies have been formed in other university areas as well. Oxford, for instance, has a Director of Post-graduate Study, who is responsible for arranging courses in different specialities as well as refresher courses for general practitioners. There is a post-graduate medical committee, whose chairman is also the Dean of Post-graduate Studies in the university. The committee is primarily responsible for arranging the various courses, both for general practitioners and young specialists. There are three types of courses, 'extended course', 'intensive course' and, 'short courses in special subjects'. The committee is also associated with the selection and training of registrars, which is the joint responsibility of the university, teaching hospitals and regional hospital board.

An efficient organisation for post-graduate medical studies also exists in Edinburgh.

There has been an unfortunate tendency on the part of the British universities and other examining bodies to institute several degrees and diplomas for all sorts of specialities. Though a considerable volume of opinion has gathered during recent years deprecating this tendency, the desire for institution of new diplomas has increased the keenness of newly qualified men and women to collect as many degrees and diplomas as possible. This tendency is having a deleterious influence on Indian doctors who have gone to the United Kingdom for post-graduate studies. No doubt the policy of the Government of India has been during recent years to dissuade students from going for foreign post-graduate medical degrees. Unfortunately, however, employment agencies in the States are still issuing advertisements calling for applications for vacant posts from candidates possessing foreign post-graduate qualifications. It is high time that it is made known to all concerned that Indian post-graduate medical qualifications should be considered sufficient for a teaching post. No doubt experience gained abroad, and not foreign diplomas and degrees, should be considered as an additional qualification for a teaching post.

### AMERICA

1. RECENT TRENDS IN UNDERGRADUATE MEDICAL EDUCATION.—Modern trends in medical education in the States have been clearly indicated in the Annual Report of the Commonwealth Fund for 1952—"Medical Education, for which a new pattern was set up by the Flexner Report of 1910, may now be in the second of 3 phases of adjustment. The first . . . has had scientific medicine as its objective and slogan, specialisation as its dominant pattern, and the university medical centre as its preferred instrument. The section, now unfolding is a phase of transition in which the concept of comprehensive medicine is beginning to modify the definition of scientific medicine, in which there is some reaction against the extremes of specialisation and in which a few medical centres are beginning to re-examine their functions and achievements in a moderately objective way. It is reasonable to hope that it will be followed by a third phase in which there will be some reconciliation between what has been called scientific medicine and what is now called comprehensive medicine, some better adjustment of the specialist to the generalist, and some restructuring of both medical education and medical care to fit the needs of a more knowledgeable social order. Scientific medicine has hitherto been weakest in relation to the patient's effective life and its social environments. The behavioural sciences are already helping the doctor to rely less on intuition and more on systematic knowledge as he approaches these facts of the patient. Not to make use of them so far as they are usable would seem to be unscientific. Can scientific medicine be anything less than comprehensive ?"

Responsible medical educationists in the States have been seriously thinking on the above lines for some years. The modern American is motivated by persistent dissatisfaction and is spurred to greater and greater activity and experimentation. I visited over a dozen medical schools and had long discussions with leading medical educationists in that country. No doubt, there is sharp difference of opinion as to the

advisability or otherwise of the various experiments that are being conducted in some of the medical schools. Some deans and several professors particularly of pre-clinical subjects, look upon the so-called comprehensive medicine and the trend to integrated study of several subjects, with considerable alarm and suspicion. One of the main criticisms against integration is the extra time to be spent by teachers in teaching, at the expense of the time which they are now devoting for research. Rightly or wrongly they feel that the rapid advances that have been made during the last few decades in the various branches of medical science is because of the distinctive status given to the various sections as independent entities. In some of the European countries and also in some of the schools in the States, there are separate Institutions for anatomy, physiology, biochemistry, etc. No doubt, such compartmentalisation has been very largely responsible for the rapid advances that have taken place in the medical sciences.

Brief account of some of the important institutions and interesting experiments that are being conducted in some of the medical schools in the States are given below.

*University of Colorado School of Medicine.*—In the medical school at Denver a home care programme for a selected community is in progress, with the main purpose of broadening the basis of experience of both students and teachers. The students by participating in such a programme are able to obtain first-hand experience and knowledge about the influence of personal, social and environmental factors on the incidence of disease and on its progress. In this school, training for general practice has been chosen at a target. The school has entered into partnership with the City Health Department for this purpose. The base of operation is the Denver General Hospital. Here an organisation of students and teachers designed to give family medical care in conjunction with nursing and social service, carries out the same functions as are ordinarily needed in the patient's home, in the clinic or in the wards. The students are both undergraduate and graduate students in medicine, working under the supervision of a group of instructors. A general medical clinic which replaces the conventional out-patient department constitutes the core of the plan. A patient who comes to the clinic is examined and cared for by a medical student and young physician. Specialists are called in when their special skills are required. The patient, however, returns to the general clinic after he has been examined by the specialist. Many patients are visited in their homes. When a patient needs hospitalisation, a member of the clinic staff follows him in the ward, shares responsibility of hospital care of the patient as far as is administratively practicable, and keeps in touch with him after discharge. A single record accompanies the patient wherever he goes. Throughout the programme the preventive aspects of medicine are emphasised for the student in a framework where the teaching and practice of medicine meet a common ground.

*Harvard Experiment.*—For some time the teachers in Harvard school have been feeling dissatisfied with its educational programme for under-graduate and graduate students in medicine. A bold integrated approach to teaching has been made as a pilot venture in the field of graduate study in basic sciences for the Ph.D. course, before they take up their specialist courses like biochemistry, physiology, pharmacology, etc. Under the leadership of Dr. Eric G. Ball, Professor of Biological Chemistry and Chairman of the Division of Medical Sciences, an inter-departmental committee designed the course and is conducting the teaching programme. I discussed fully with some of the teachers, the methods adopted for the experiment. Different aspects of the subject are dealt with in the same class, by different teachers from the various departments. Even when practical experiments are conducted by the students, most of the teachers belonging to the different departments are present in the class. This method of approach is an education both to the student and the teacher. The experiment is designed to bring the student into close contact with the literature, experimental techniques and basic concepts associated with each of the sciences. Its immediate object is to lay a better foundation for teaching and for "a life of productive scholarship in medical sciences". I was told by Dr. Berry, the Dean of the Harvard Medical School, that the experiment will gradually be extended to teaching of under-graduate medical students. He said that in the next academic year his Faculty had decided to

use about half a dozen new entrants to the Medical School as human guineapigs in order to try out in a small way, this new experiment, in the training of medical students.

*Western Reserve.*—Though I did not have the opportunity of visiting the medical school at Cleveland I had the occasion to discuss the pros and cons of the experiment with several prominent educationists in the States and get an underlying idea of its principles. It is no doubt a radical and revolutionary approach to reorganising the entire medical curriculum. The sponsors of the programme at Western Reserve, believe that for an adequate orientation to the course " he should be introduced from the beginning and simultaneously to the basic principles and effects of man's structure, function, growth behaviour and relation to his surroundings ". The object is to enable him to study medicine as a whole and not piecemeal. For this purpose, teaching is done by interdepartmental groups and not separately by the various departments. Hence from the very beginning an introduction to clinical medicine is given and services of physicians, surgeons, anthropologists, psychiatrists, social workers, etc., in addition to the basic science teachers, are utilised. Even early in their course the students are brought into contact with patients. The patient's family and his environments are also studied in order to obtain adequate knowledge about their influence on the illness of the patient and *vice versa.*

*Comprehensive Care at Cornell.*—When I visited Cornell Medical School I had occasion to attend one of the conferences held by the clinic for 'comprehensive care'. The patient exhibited was a female child of 3 years whose genital organs and the bladder had to be completely removed as treatment for a malignant tumour. The discussion centred round the psychological changes introduced in the child, the attitude of the mother to the child, prognosis, etc. The surgeon, the physician, the medical social worker and the child psychiatrist all took part in the discussion. It was indeed a stimulating experience. The fourth year medical students of the school attend the clinic and are given the course in comprehensive medicine. The course is designed to be a synthesis of all disciplines to which the medical student has been exposed during the preceding 3 years in the Medical School. " It is a laboratory course in patient management, providing 22½ weeks of contact with a patient in the medical, paediatrics, and psychiatric clinics of the New York Hospital." Apart from learning techniques of physical examination and acquiring skill in differential diagnosis he is expected during the course to learn how to work with nurses and social workers in co-ordinating hospital facilities and community agencies in the service of the patient. In addition, the student has to attend to one or more families of patients; the student thereby virtually becomes the family physician for the patient and other members of the patients' family. He examines the patient and his family when they fall ill and helps in making diagnosis and providing treatment both curative and preventive. Even if such a patient is hospitalised he continues to follow him. The student is expected to keep appropriate record of the whole family. Perhaps the most stimulating experience which the student has during the course is group discussion during conferences. He will be responsible for presentation of one or more of his patients on these occasions.

The 'comprehensive care' and teaching programme at Cornell is expected to give the student continuing responsibility for patients when they are ill at home, in the clinic, or in the hospital. Preventive and social aspects of medicine are stressed as integral part of total patient management.

*Pennsylvania Medical School.*—For the last 4 years an interesting programme called " the family advisory group " has been in progress in this school. The student who volunteers for this programme is introduced to a family as a " doctor in training ". The family physician's approval and co-operation are obtained for this purpose. In fact he takes part in the teaching programme of the student. The medical students in this school serve thereby as links between the family and the university hospital and its clinics. They assume gradually increasing responsibilities for the medical and relative problems of the families throughout the 4 years in the medical school. Even the 1st year student is thereby enabled in the first instance to get practical experience in human relations. His interest in the study of medicine is augmented by the feeling that he is

the active agent and not just an observer. He is also brought in direct contact with medical practice in the home and community.

2. POST-GRADUATE MEDICAL EDUCATION.—The newly passed out medical graduates undergo internship for a year. When this is completed, majority of them take up residentship in hospitals for varying periods. While a large number go into general practice, a substantial proportion of young doctors take to specialisation, for which purpose they continue to be residents in recognised teaching hospitals for varying periods as specified by the Certifying Boards. The period of residentship training may extend from 3 to 5 years. Ordinarily no degrees or diplomas are given by American Universities, except in case of pre-clinical medical sciences. Recently, however, some of the universities are giving Master's Degree in clinical sciences as well.

Continuing education of the physician is receiving increasing attention in the medical schools in the States. It has been fully realised by the authorities concerned that it is extremely important to help practitioners in maintaining and expanding their professional competence under the stress of practice. Apart from medical schools, professional associations are also taking active interest in promoting post-graduate medical education. The American College of Chest Physicians for example has been conducting short courses in chest diseases for medical practitioners, in different parts of the country. As member of the Board of Regents of the College I was able to obtain detailed information about the courses themselves and evaluate their usefulness, and the response from the profession. I found that the courses arranged by the College of Chest Physicians were well organised with the voluntary and willing co-operation of many eminent specialists in the field. Considering the cost involved, the response from doctors have been most enthusiastic and encouraging.

Though there is difference of opinion among visitors to America about the adequacy of clinical training given to undergraduate medical students, there is unanimity of opinion about the excellence of the post-graduate training in the States in many medical schools and universities. Systematic courses are conducted for graduate and post-graduate studies. In certain universities like Pennsylvania, there are faculties exclusively for organising such courses. Students work under the supervision of expert staff even in respect of clinical specialities. In the Graduate School of Pennsylvania all graduate students irrespective of whether their training is in the clinical or the pre-clinical sciences, have necessarily to undergo an intensive course in non-clinical subjects during the first academic year. The School offers the Master's Degree in clinical subjects after a three-year course and the Doctorate degree in pre-clinical subjects at the end of 4 years. Invariably the graduate students are encouraged to do research on particular problems pertaining to their respective specialities, in addition to undergoing the training programme. Incidentally, it may be mentioned that experience in research and publication of original papers are considered essential qualifications for teaching positions in medical schools and associated hospitals. Hence almost all the students who undergo training for specialisation are keen in obtaining research experience.

*(By courtesy of the Journal of the Indian Medical Association.)*

" I do not think that this department will be of interest to us now, so let us pass on".

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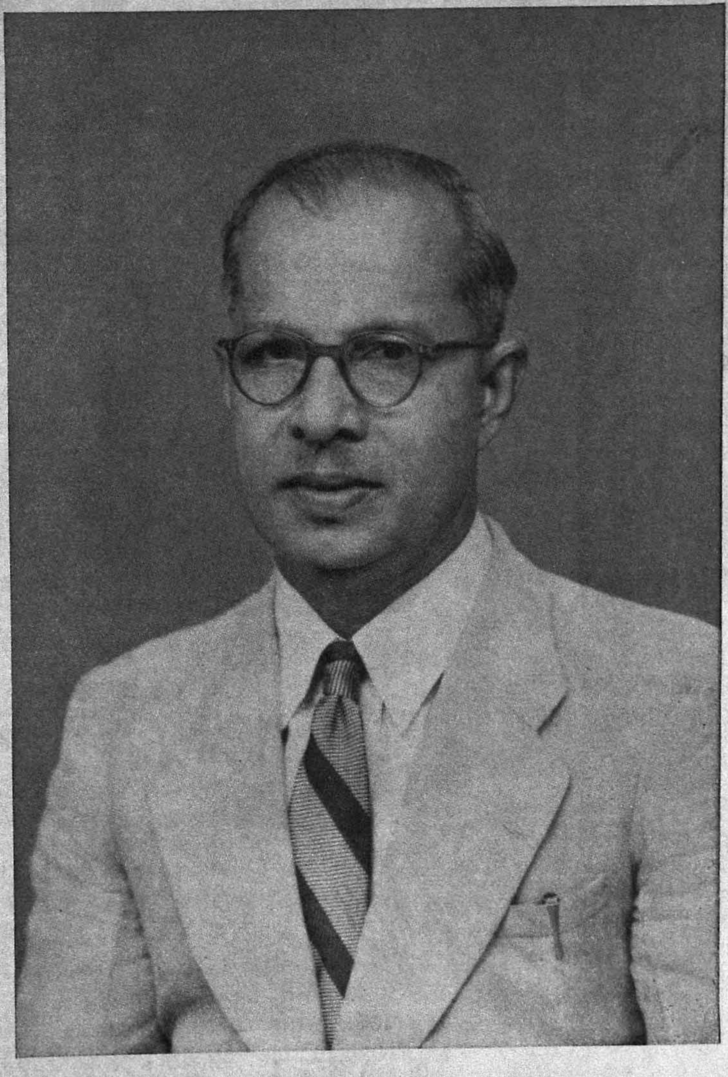

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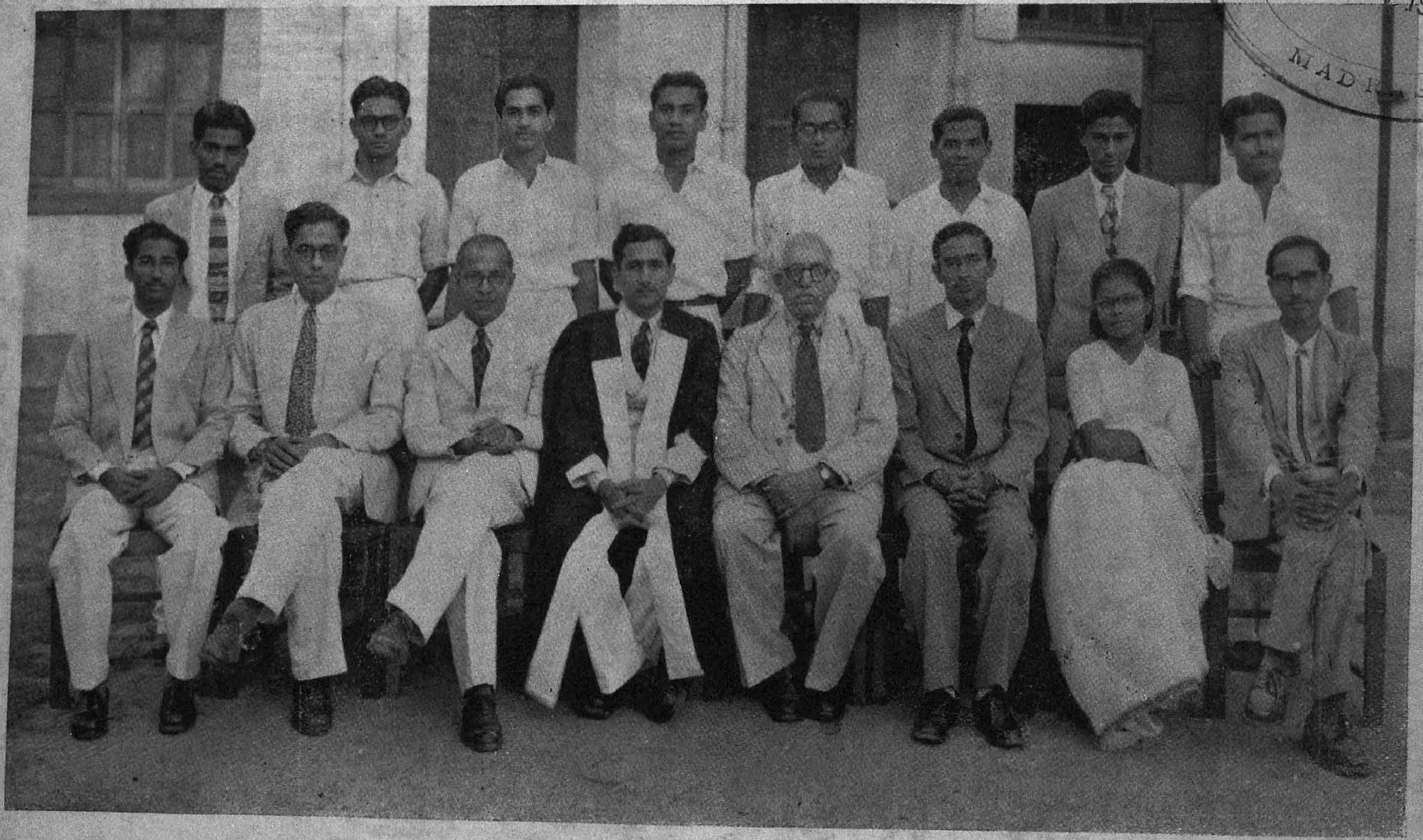

Photo Taken at the Farewell Party to Dr. G. D. Veliath on 27—11—54

## ARTICLES

# Rapid Methods for Assessing Gross Variations in the Serum Protein Fractions

*By*

NINAN VERGHESE, B.SC., M.B., B.S., M.SC.,

*Professor of Biochemistry, Stanley Medical College, Madras.*

ONE of the most frequent biochemical *analyses performed* by a clinical biochemist is the estimation of serum—albumins and serum globulins. This analysis takes much more time than the other routine estimations when performed by any of the accepted methods. Therefore the Physicians and the Surgeons often get the reports of the serum protein estimations later than they would like to have them. Under these circumstances a simple and rapid bed side test which would give some rough idea of any alterations in the serum protein fractions would be useful as a preliminary screening test.

*Cadmium Reaction* [Wuhrmann and Wunderly (1949); Chaudhuri and Dutta (1951) and Ninan Verghese (1954)] can be very advantageously used for this purpose. It requires very little equipment and the only reagent used, namely the cadmium sulphate solution, is very stable and can be kept without deterioration for a long time. For these reasons this would be a very convenient test which can be easily performed at the bed side or in the side room Laboratory.

*Technique of the Cadmium Reaction.*

In a small glass tube of 8 mm. diameter is placed 0.4 c.c. of freshly centrifuged serum. 4 drops (0.2 c.c.) of a 0.4% solution of cadmium sulphate are slowly added to it from a precision pipette. During the addition the mixture is gently shaken to ensure mixing. If a turbidity appears, the fact and the degree of the turbidity are noted, at one minute and five minute intervals. A slight but perceptible turbidity is designated as a + reaction. When the turbidity is intense enough at the end of 5 minutes to make the solution opaque, it is designated 1 + to 2 +. When such a turbidity is obtained immediately after the addition of the reagent, the reaction is strongly positive and can be designated as 2 + to 3 +.

CADMIUM REACTION

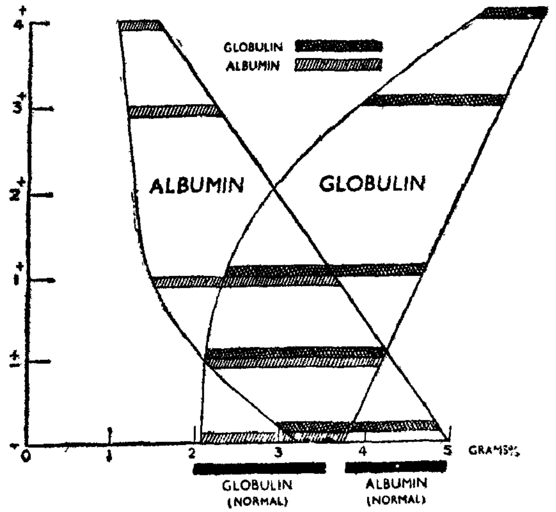


FIG. I.

If there is immediate flocculation and precipitation on the addition of the reagent, the reaction is 4 +.

The cadmium reaction is due to the dehydrating action of the sulphate ions on the protein fractions of the serum. The degree of positivity is proportional to the increase in the globulins and the decrease in the albumins of the serum as shown in the Fig. I.

| Normal | Obstructive Jaundice | Hepatitis | Hypoproteinaemia | Cirrhosis | Total cases | Cadmium Reaction | Maximum and Minimum values for Albumins Grams % | Maximum and Minimum values for Globulins Grams % | Average value of Albumins Grams % | Average value of Globulins Grams % |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1 | 9 | — | — | 14 | — | 4·98 to 3·18 | 3·74 to 2·01 | 4·17 | 2·91 |
| 11 | 2 | 26 | 3 | — | 42 | + | 4·92 to 2·05 | 4·28 to 2·01 | 3·54 | 2·97 |
| — | — | 6 | 3 | 15 | 24 | 1 + | 3 25 to 1·38 | 4·51 to 2·30 | 2·43 | 3·54 |
| — | — | — | 5 | 11 | 16 | 2 + | 2·95 to 1·30 | 5·20 to 2·72 | 1·91 | 4·36 |
| — | — | — | — | 2 | 2 | 3 + | 2·36 to 1·25 | 5·51 to 4·18 | 1·81 | 4 85 |
| — | — | — | — | 2 | 2 | 4 + | 1·51 to 1·01 | 5·54 to 5·25 | 1·26 | 5·40 |

Fig. II.

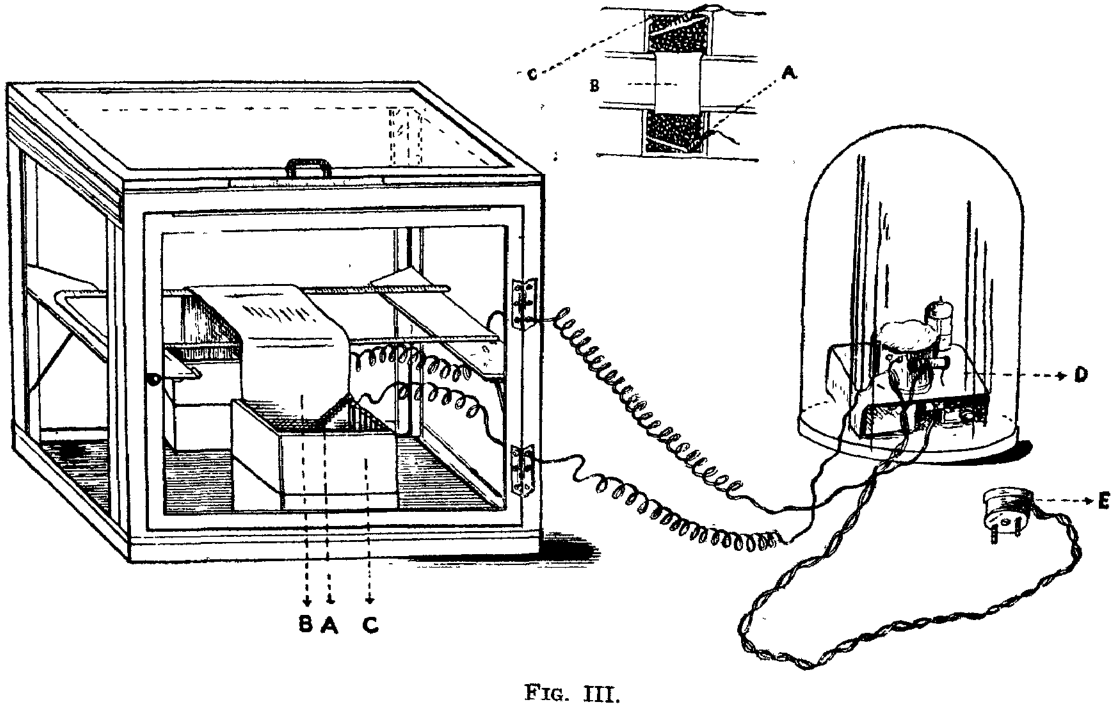


Fig. III.

A.—Electrodes, B. Filter paper strip, C. Buffer compartment, D. Power pack, E. Plug for 220-250 voltmains.

The cadmium reaction does not appear to be influenced by the changes other than the variations in the serum protein fractions which are met with in the different clinical conditions. This can be seen from the Fig. II.

This preliminary screening test will easily spot all the cases of hyperglobulinaemia. As long as the serum protein fractions are within the normal limits without any appreciable change in the albumin globulin ratio the cadmium reaction will be negative, or + if the albumin values are slightly low. A + to 1 + reaction usually indicates that the albumin and globulin fractions are about equal. A 1 + to 2 + reaction indicates a definite increase of the globulins over the albumins. Marked hyper globulinaemia, as seen in cirrhosis of the liver and Kala-azar usually gives a 2 + to 4 + reaction.

Further information about the nature of the globulin fractions can be obtained by filter paper electrophoresis. Different methods for separating serum protein fractions by slightly different types of electrophoresis apparatus are known. (Durrum 1950), (Cremer and Tiselius 1950), (Kunkel and Tiselius 1951). The construction and the operation of a filter paper electrophoresis apparatus is so easy that one can be made and used even in a small clinical laboratory. One such apparatus made in this department is shown in Fig III.

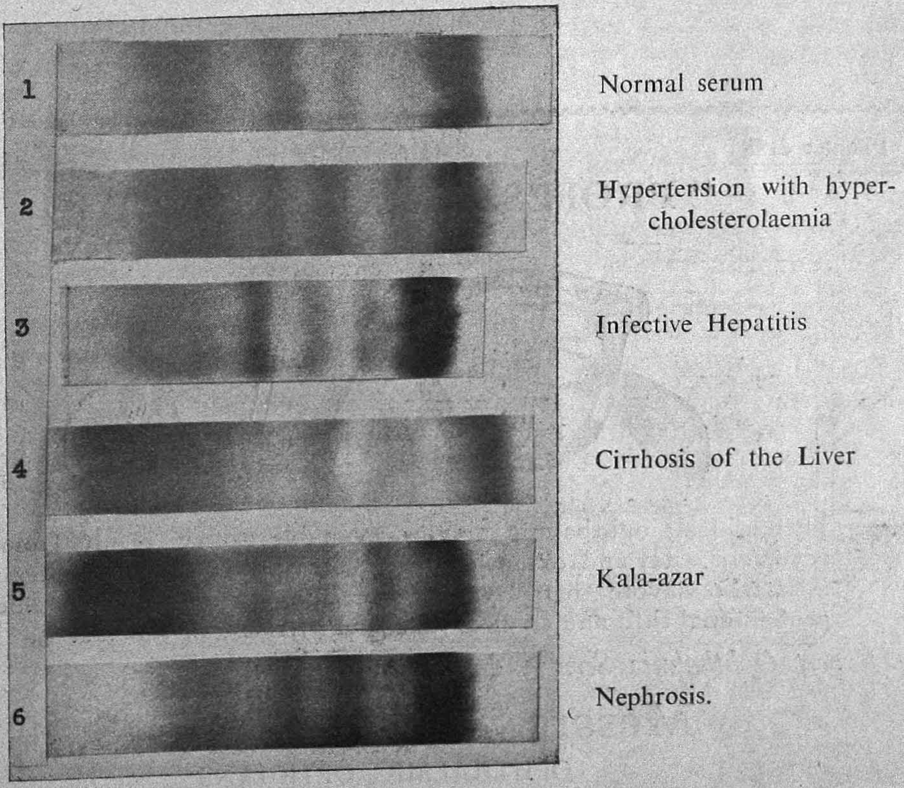


FIG. IV.

Electrophoretic patterns can be obtained with 0.01 to 0.05 c.c. of serum within six hours. For clinical biochemical analysis where limited amounts of material is available and where the speed of analysis is an important consideration, paper electrophoresis is to be preferred to the classical *Tiselius procedure.* Very useful information for diagnostic purposes can be obtained by comparing a normal electrophoretic pattern of the serum proteins with that of a sample under investigation. A few examples of electrophoretograms are shown in Fig. IV. For diagnostic purposes these patterns give additional information about the nature of the globulin fractions.

*Acknowledgment*: I have to specially thank Sri M. A. Rangarajan of the Chemistry Department, for the construction of the Power Pack for the Electrophoresis apparatus.

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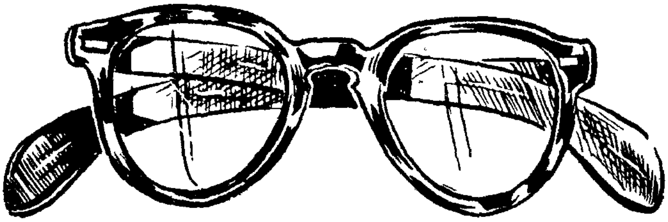

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# Cancrum-Oris and After

25 NOV 1956
MADRAS

By

M. VASUDEVAN, M.S.,

*Honorary Assistant Surgeon, Stanley Hospital, Madras.*

AMONG the many diseases to which we are now able to offer a cure by Penicillin cancrum oris has to be specially mentioned. Prior to the advent of penicillin rarely did a cancrum oris patient ever recover unless the lesion was very mild.

*Clinical course*: Noma, or cancrum oris or gangrenous stomatitis, starts as a livid area on the inner side of the cheek or gum which rapidly turns into black and sloughs, spreading peripherally invading the surrounding healthy tissues. There is little pain. The whole area necroses emitting very offensive smell. The jaws are next invaded the teeth loosen in the necrotic mass and fall. In advanced cases the floor of the mouth or the whole cheek sluffs and drops off exposing the interior of the mouth.

There is little resistance to infection, signs of inflammation are poor except slight oedema in the initial stage.

*Predisposing causes*: Debilitated persons especially children are prone to this malady. The cause of debility may be any prolonged fever like Kala-azar or chronic malaria from which the patient is suffering or convalescing, or as we observe in the wards, diarrhoea in poor undernourished children. Infrequently it may be mere semi-starvation or pulmonary tuberculosis.

*Blood changes*: The poor standard of general health is evidenced by the anaemia, pancytopenia, reduced blood proteins with derangement in the albumin-globulin ratio.

*Bacteriology*: The discharge swarms with the fusiform bacilli and spironema vincenti (Vincent's organisms) and in addition to these, the usual secondary invaders like staphylococci.

*Micropathology*: The invading area when examined under the microscope shows little leucocytic response but on the other hand are seen to be invaded by the Vincent's organisms demonstrating that they are not merely saprophytic but also capable of invasion.

"It is not at all likely that completely healthy tissue will succumb to gangrene-producing bacteria, but under circumstances of devitalisation bacterially produced gangrene can occur without gross obstruction to the circulation." This is the case in cancrum oris.

*Treatment*: Early treatment and adequate nourishment during and after debilitating illnesses would to a great extent prevent the decline of general health.

Once the lesion is detected early, prompt treatment can offer a complete cure. Penicillin in heavy doses—erring on the side of over-dosage—should be administered parenterally. 2 lac units of Crystalline Penicillin G. every 6 hrs. in the initial period, and when healing is in progress, 2 lac. units twice daily I.M. is found to be adequate. Local instillation of Penicillin solution is advantageous. The mouth should be cleaned frequently with cleansing gargles. Side by side the concurrent illness also should be treated.

Patient is given nourishing diet supplemented with vitamins A and D, B-complex and C and hydrolysed proteins. Blood transfusion enhances recovery especially in anaemic cases. Saline infusion is given when patient is dehydrated.

During penicillin therapy, the spread of gangrene is arrested, the foul discharge lessens and the already necrosed tissue is shed, while the surrounding healthy tissue granulates and finally epithelialises. In early cases healing is complete in a week. When the gangrene has spread and destroyed the lips or cheek, after the healing takes place it leaves its mark as permanent defects. Where the bone is involved, the affected area sequestrates and within 2 to 3 granulating bone, there again resulting in weeks gets detached from the healthy permanent defect.

*Case report*: Such was the case with 4 years old Sita who on admission in the Stanley Hospital had necrotic patches on

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Photograph 1

Photograph 2

Photograph 3

Photograph 4

the right half of the upper lip and corresponding area on the gum underneath. She was still suffering from diarrhoea of 1½ months duration as a result of which her general health was far below par.

The response to treatment was good and by the third week, the ulcer had almost healed, but practically the whole of the right half of the upper lip and a corresponding area of the alveolar process of the maxilla underneath had sloughed off. By concurrent treatment for diarrhoea, and nourishing diet supplemented by vitamins and protein hydrolysate, she gained weight and in a month and a half she was quite healthy. (Photograph 1.)

*After treatment*: As the defect was too extensive to be repaired by merely mobilising the lip, and as any flaps raised from neighbouring regions would only increase scarring, it was decided to graft the gap in the lip by a pedicle raised from the abdominal wall through the forearm as intermediary.

*Operation*: 1. Two transverse parallel incisions 4 inches in length and 2 inches apart were made on the anterior abdominal wall to the left of the umbilicus (Fig. 1).

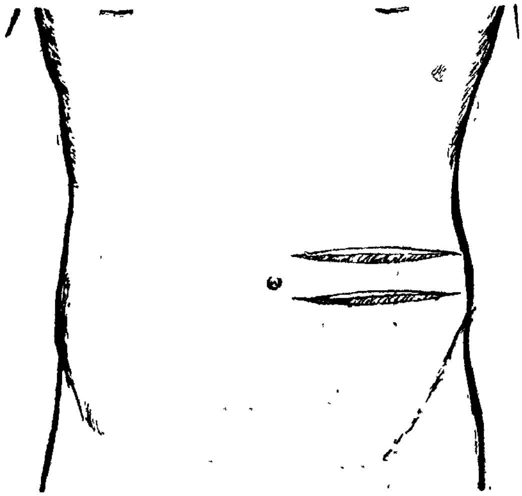

Fig. 1

The intervening skin with subcutaneous tissue was raised. The raw area in the abdominal wall was closed by mobilising and approximating the edges by two layers of sutures, a deep row of interrupted catgut for the subcutaneous tissue and a row of interrupted nylon for the skin.

The raw under-surface of the pedicle was grafted by split skin taken from the left thigh. This was done instead of tubing the pedicle to get a flat pedicle which was rectangular on cross-section. It was of uniform thickness and slightly thicker than that of the lip to allow later contraction (Fig. 2).

Fig. 2

After ten days the medial end of the pedicle was 'half-cut'. This procedure consists of cutting one end of the pedicle, by half its thickness and stitching again to, leave no raw area. This 'half-cut' which has produced a deficit in blood-supply promotes the growth of blood capillaries from the uncut end in compensation, and in two weeks' time, the pedicle would have obtained sufficient blood-supply, so that completely severing the half-cut end would not jeopardise the viability of the pedicle.

2. Two weeks later the inner end was completely cut. A semi-circular incision was made on the radial side of the lower end of the left forearm, the flap was raised and to this raw area the cut end of the pedicle was sutured (Fig. 3). The limb was immobilised in plaster (Photograph 2).

3. After ten days the abdominal end of the pedicle was half cut and after ten more days it was detached from the abdominal wall. The free cut end was sutured to the lateral margin of the defect where a corresponding raw area was made; arm being raised to the level of the face with the forearm pronated and kept in a suitable position. The arm and head were immobilised in plaster (Photograph 3). The forearm end of the pedicle was half cut on the tenth day, and one week later arm was freed from the pedicle (Fig. 4).

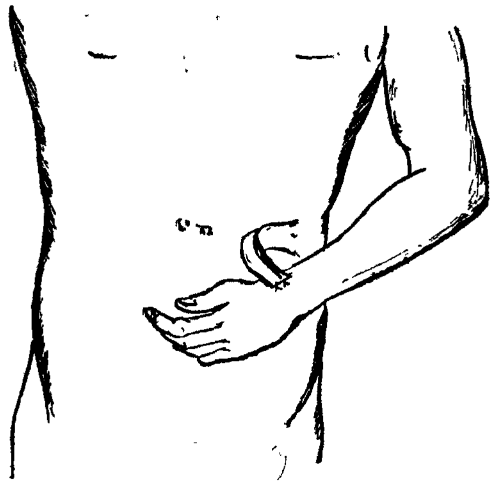

Fig. 3

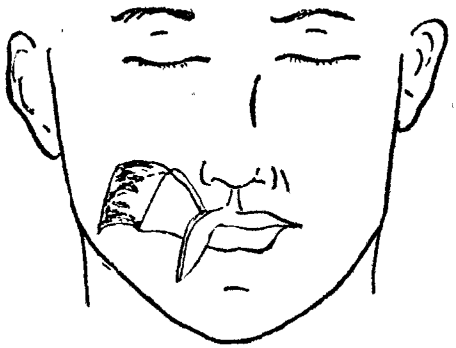

Fig. 4

At this stage three weeks interval was given to the child to play and for the pedicle to contract.

4. The lip was freed from adhesions by an incision in the labiogingival margin. An incision (dotted line in Fig. 4) was made on the medial side of the defect parallel and 2 mm. away from the mucous membrane margin and a pedicle with the mucous membrane was thus reflected down. (Fig. 5). To this raw area thus made the medial free end of the pedicle was stitched up after freshening and trimming to the required size. The upper border was stitched to a corresponding area in the defect, both being made raw. A slice of skin was excised from the inferior border of the pedicle and to this raw area the pedicle with mucous membrane was stitched to give a red margin (Fig. 6).

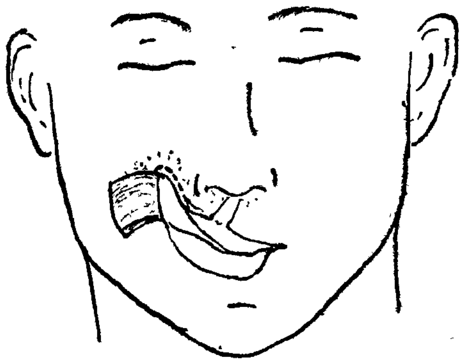

Fig. 5

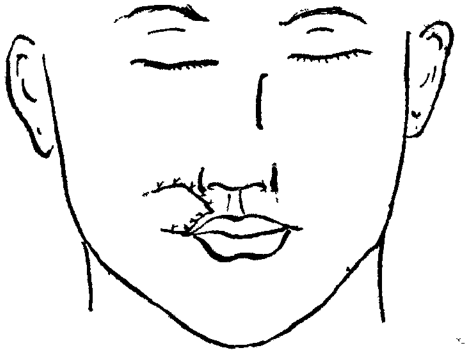

Fig. 6

All these stitches were made in two layers outer interrupted nylon and inner interrupted catgut.

Healing was good and the post-operative effect was fair. (Photograph 4.) The upper lip looked slightly depressed due to the defect in the maxilla for which an artificial denture with suitable plate should be provided.

*Follow up* : Nine months later the grafted skin was found to be still pigmented. It had developed protopathic sensation.

My thanks are due to Dr. K. C. Nambiar, F.R.C.S. for his kind suggestions, the Dean, Stanley Hospital for permitting me to publish the case.

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### DETAILS ABOUT PHOTOGRAPHS AND FIGURES.

*Photographs*:

1. Pre-operative photograph of patient.
2. The pedicle is attached to the left forearm and immobilised.
3. Pedicle from forearm stitched to the defect
4. Post-operative photograph after three weeks. Light application with face powder could conceal the pigmentation and light scar.

*Figures*:

1. Incision.
2. Pedicle raised and under-surface grafted.
3. One end of pedicle is sutured to a raw area on the left forearm.
4. Dotted line—line of incision. Shaded area shows area to be under-cut.
5. Dotted line—line of trimming the pedicle. The flap with mucus membrane is reflected down.
6. Final suturing of flaps.

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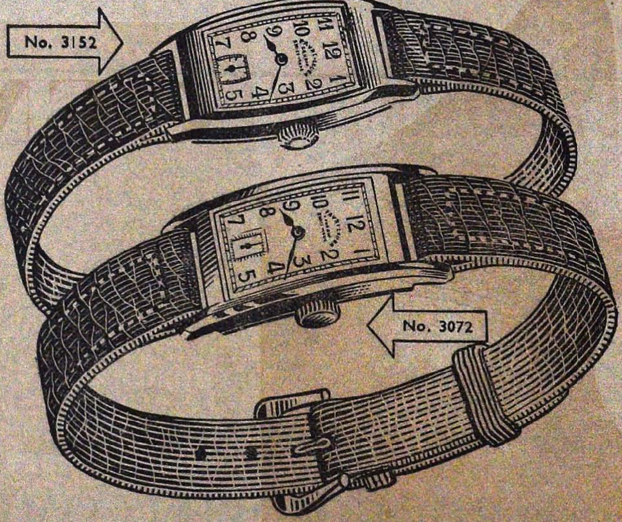


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# KEMICETINE

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# Treatment of Typhoid Fever with Laevorotatory Chloramphenicol

By

AL. ANNAMALAI,

*Assistant Physician, Stanley Hospital and Tutor in Medicine, Stanley Medical College*

AND

MANKANI KRIPAL,

*House Physician, Stanley Hospital, Madras.*

TYPHOID fever is prevalent in the state of Madras between the months of September and February. The rise is gradual from September to November, reaches its peak in November-December and decline towards February.

85 cases of typhoid fever were admitted in the medical wards of the Government Stanley Hospital, Madras, in the period October 1953 to January 1954, under Dr. G. Victor, Physician, Stanley Hospital and were treated on the following lines :

Diagnosis was based on positive cultures for *B. typhosus* and *B. paratyphosus A* and *B* from blood, urine or stools. In a few cases where cultures were negative Widal reaction of 1 in 200 positive or more was taken as diagnostic.

The age incidence varied from 12 years to 60 years. Of the cases reported five were females. Most of the cases were admitted after about 5 days of fever outside.

### TREATMENT

From the time of admission the patients were given a saline drink freely and vitamin C 100 mg. daily and adequate dose of vitamin B complex.

The treatment with laevorotatory chloramphenicol* was started 48 hours after admission and after the bacteriological diagnosis had been obtained. The dosage adopted was 1 tablet (250 mg.) every half an hour for the first two hours followed later by one tablet every 4 hours till the temperature touched normal. Thereafter 1 tablet every 8 hours for 8 days and 1 tablet twice a day for 2 days. The temperature usually touched normal in the course of 48 to 96 hours, after administration of 4 to 7 g. on an average.

A typical temperature chart is annexed (Fig. 1).

The temperature response was early when the treatment was started within the

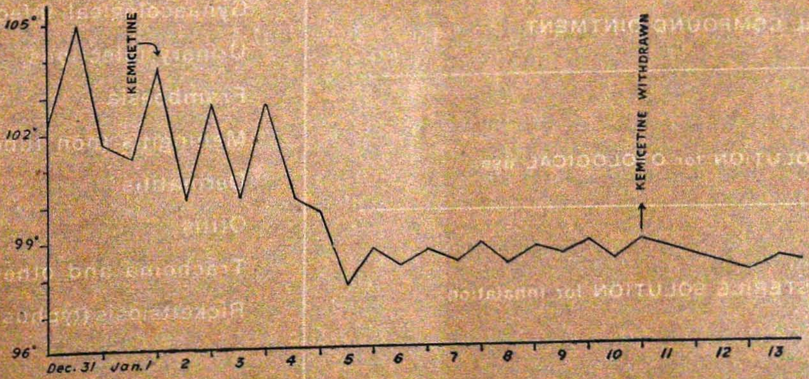


FIG. 1.

* The drug used was Kemicetine, a proprietary preparation.

first 10 days or after the 16th day of fever. The response was slow when the treatment was started during the 10th to 16th day of fever.

Two patients who apparently acquired infection from patients treated with chloramphenicol at home responded slowly and required a larger dose of the drug.

One patient who had prophylactic T.A.B. vaccine during the incubation period was also treated with the drug. He too responded well but the doses required were slightly higher than the average, and it took 4 days for the temperature to come down.

One patient treated with aureomycin prior to admission also responded slowly to the action of the drug and required a larger dose.

The incidence of peripheral collapse is high when the treatment is started late *i.e.* after 12 days of fever.

As prolonged antibiotic theraphy leads to vitamin B-complex deficiency as evidenced clinically by stomatitis, and red raw tongue, massive doses of B-complex were given from the first day and continued up to the end of the first month of convalescence.

Adequate intake of fluid was ensured by giving 6 pints of fluid daily in the form of milk, barley water etc.

Where there was evidence of insomnia and restlessness, barbiturate was administered at bed time, ensuring sound sleep for at least 6 hours.

In cases where delirium supervened, lumbar puncture was carried out, with great relief.

In two cases where the patients were admitted after 15 days of fever and with signs of severe toxaemia, ACTH was administered for 1 day in a dosage of 10 mg. intramuscularly every 6 hours. This helped to bring down the temperature earlier. Simultaneously the patient experienced a sense of well-being. ACTH is, however, contra-indicated where a perforation is suspected.

DIET. During the febrile period patients were given fluids only in the form of milk and barley water. Patients were given bread, milk and orange juice during the first 72 hours of the afebrile period. Later rice and buttermilk were added to the diet. The quantity of food given was regulated by noting any small rise in temperature, signs of intestinal distension and any evidence of diarrhoea. Distension was noted in those cases where the patients had received glucose without the knowledge of the attending staff. Absolute avoidance of glucose and administration of rectal saline relieved the distension completely.

TREATMENT OF COMPLICATIONS: Distension of the abdomen, if present at the onset, disappeared with the specific treatment with antibiotics. Very rarely dietetic restriction was necessary.

The mild headache usually disappeared with the administration of the specific drug but severe headache, if present at the time of admission, persisted for 2 days in spite of the antibiotic. No analgesic was given to relieve the headache.

The specific antibiotic also controlled the diarrhoea which might have been present at the time of admission. Diarrhoea as a complication of the drug or as a result of diet was not met with.

Intestinal haemorrhage was seen during the course of treatment in 4 cases for which blood transfusion, and injections of thromboplastic substances and vitamin K were given. All the patients rallied.

One case with an intestinal perforation which had occurred prior to admission, was admitted in the surgical ward, operated on, and transferred to the medical ward on the 7th day. The antibiotic was given in the surgical ward, and on transfer to the medical side the drug was continued. The patient developed post-operative distension of the abdomen which was not controlled by energetic treatment. The patient died on the 10th day after operation.

Two patients who developed aphasia during the course of treatment were put on tolazoline hydro-chloride (1 tablet every 6 hours). Complete recovery occurred at the end of 48 hours.

Complications like boils, parotitis, neuritis, thrombophlebitis, otitis media, osteomyelitis and iritis which were met with during

the year 1952-53 were not encountered in the present series.

The dreaded complication of peripheral collapse after drug administration which is said to be the result of excessive fluid and sodium loss and the sudden release of toxins was not met with. This was probably due to the adequate quantities of fluid and sodium chloride given throughout the course of the disease. Similarly the early administration of vitamin B-complex prevented the occurrence of neuritis and boils.

All the cases were followed up for a period of 21 days after discharge. No case of relapse was observed in the reported series.

## DISCUSSION

The observation that the blood level of the chloramphenicol is comparatively higher when administered in the form of tablets is amply borne out by our experience with the clinical trial of Kemicetine. The drug in tablet form was effective in controlling the temperature within a shorter period and in a lower dosage. The total dose of the drug required was about 12 to 17 g. Similar response was obtained in Calcutta by Roy Chowdhuri, *et al* (1953).

The drug was well tolerated by all the patients without any evidence of untoward symptoms. Mortality in the treated series was nil. The only death which occurred was as a result of intestinal perforation which had occurred prior to admission in the hospital.

Most of the patients were discharged on the 15th day after admission and were able to resume their normal work about 15 days after discharge from hospital.

## SUMMARY

1. 85 cases of typhoid fever were successfully treated with laevorotatory chloramphanicol tablets with no relapse.

2. Complications due to the drug were nil.

3. 2 cases of aphasia and 4 cases of intestinal haemorrhage were met with during the course of treatment and were treated successfully.

4. Fluid and electrolytic imbalance and B-complex deficiency were anticipated and treated.

5. The drug in the tablet form is effective in small doses.

## ACKNOWLEDGMENT

Our thanks are due to Dr. K. N. Pisharoty, Dean, Stanley Medical College and Hospital, Madras and to Dr. G. Victor, Physician, Stanley Hospital and Lecturer in Clinical Medicine, Stanley Medical College, under whom the patients were admitted.

Thanks are also due to the House Physicians of our unit: Drs. Miss Janaki, Miss Leela George, Ayyamperumal, Muthu, Sankararaman, Santhanakrishnan and Jagadesan.

*Addendum.*—After the preparation of the above manuscript, 65 more cases of typhoid fever were treated on the same lines under Dr. M. D. Ananthachari, Professor of Medicine, Stanley Medical College, in the same ward. In 4 cases, intramuscular chloramphenicol (Kemicetine sterile solution 1 c.c. containing 100 mg.) was used. Dosage was 4 c.c. deep intramuscular to start with, and then 3 c.c. every 12 hours. Oral administration was resumed as early as possible. These patients were unconscious and delirious, and hence oral administration was not possible. The injection was painless and no untoward symptoms were met with.

## REFERENCE

ROY CHOWDHURY, A. K. *et al—Antiseptic*: 50: 861, 1953.

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# Can Insects Reason?

## Instinct does not explain all of the amazing acts of the insect world.

*By*
K. S. VENKATACHALAM, B.SC.,
*Final Year.*

IF one studies the general behaviour and habits of small creatures closely, one may doubt the belief that instinct plays the major part in the ordering of their lives throughout. No doubt, instinct appears to be the only possible explanation of how a 'baby' insect setting out upon a career as a member of a definite species and without material guidance or fore-knowledge can and does accurately follow the fixed laws of nature applicable to its particular species. A newly born child owes its impulses, of course to inherent instinct. As the child developes, mental reasoning gradually replaces the urge of instinct. It would not seem unreasonable to suppose a similar process of natural development in respect to small-creature life as a whole.

The difficulty in determination of instinct in the control of such life seem to lie in the fact that we do not know where instinct ends as a sole controlling medium. The word instinct is one that seems to defy a clean-cut, clear definition. Some dictionaries define it as 'Impulse' which appears as ludicrous as declaring that a steam engine works by instinct.

Henri Bergson tells us that instinct may be defined as intelligence become automatic, and that intelligence is always tending to become instinct. He also makes the interesting assertion that instinctive action is immediate and direct, without any interval of hesitation. Let us consider this matter by the help of an example. We see an ant in the act of dragging off a captured fly. We poke the ant with a twig, resulting in its scampering away at the urge of fear. But the ant only removed itself to a considered safe distance. It will then run round and about and provided we molest it no further, it will seek and, generally, regain its prey.

We may reasonably assume that the act of running away was purely an instinctive one —responding to the instinct of self-preservation. But how can we deny existence of some form of reasoning faculty in the face of the creature's reaction toward our interference? Here we observe hesitation, altered decision and apparently, reasoned out decision to try regaining that from which it *remembered* being parted.

I would ask this of naturalists who persistently deny the possession of any form of brain in insects and other small creatures. Can there be any form of memory without the existence of 'brain' to register impressions?

James Harne found that two (2) insects of the same species did not act identically in circumstances not of their choosing. He gives the following simple experiment he did. He placed a couple of garden beetles in a glass jar, at the bottom of which were placed a few drops of fruit juice. Both beetles ran round the bottom of the vessel endeavouring to escape. After a short time only one gave up the effort and concentrated upon this fruit juice which it started to consume. He then placed a stick in the jar. One beetle quickly discovered this and ran up it to freedom, whilst the other failed to appreciate the stick as a means of escape, although, in its scampering round the beetle fouled it several times.

If we have such varying reactions to identical circumstances we look like having to admit that instinct cannot alone be responsible for the control of small-creature like always.

James Harne gives another every day incident he—everyone—has seen. A spider rushes out hopefully from his 'hide' to complete the capture of a large winged victim that threatens to tear clear of the entangling net. But he suddenly stops before reaching the prey catch. Because the insect is his much feared enemy, a wasp. He watches the struggle for a moment and then quickly retires, seemingly alarmed at the prospect. When the wasp seems to get completely entangled he reappears, calculates his chances. Then it goes round the

web to ward the head of his prisoner when the wasp suddenly twists its body, the spider seems to decide that a sudden plunge forward would be too risky and returns towards his hide.

Now, in this example, instinct makes the spider to rush out towards the wasp. But instinct stops at the first halt and reason takes its possession. Otherwise instinct would have rushed our spider to its death. The spider stopped to reason out its chances after seeing his enemy. We saw his fear, retreat and his return, his decision that his prey is unconquerable and the retreat to its hide. So somewhere in his small body was functioning that which we call 'brain' controlling movements and decisions quickly and accurately to meet exigencies of the moment.

No doubt the spider weaves his web at the dictates of pure instinct. But in the matter of pattern, mode of construction, and the selection of place, individual reasoning plays an important part. He weaves his web only in such places where he can get his prey.

We admire those huge webs in our garden. But we seldom think or appreciate the brain work, calculations, and industry required in the making. Two webs are never alike and the mode of construction also differs from individual to individual. Is it, we may ask, just by chances that it attaches one tie to that twig and then drops to form another anchor upon the twig below and then across to the opposite side luckly to discover obliging twigs? No! we can rest assured that the whole structure is commenced only after careful survey and then carried out strictly to plan. Instinct is, doubtless, the prime mover in these affairs of Nature, but some form of intelligence equal to cope with the varying problems, must accompany the urges of instinct.

---

# THE PATHOLOGIST

Pity the poor pathologist,
Who lurks inside a lab.,
Discerned through dim obscuring mist
Like some strange hermit crab.

Observe his solitary trends,
His shy eccentric habits;
His chief associates and friends
Are guinea pigs and rabbits.

A trifle immature in all
His actions, don't you think,
Making a private urinal
Of any handy sink?

Another sign you may detect
As casually he looks in—
That "Rosy-fingered Dawn" effect
Contrived with carbol fuchsin.

Such stigmata you should ignore,
With others, scarcely sweeter,
His vampire trick of sucking gore,
His craze for fresh excreta.

His daily round, his common task
Is growing germs on seaweed,
Or wandering round the wards to ask
If So-and-So has w . . d.

You might reflect, as you collect
That early morning specimen,
Pathologists (with all respect)
Must be extremely messy men.

Sincere pathologists admit
Such habits may pollute 'em—
You can't aetheticise a spit
By labelling it "sputum"—

But though their trade perforce consists,
In traffic so obscene,
In private life pathologists
Are often fairly clean.

—R.B.P.

# "The Jocular Vein"

The seller of a certain remedy for nervous diseases has got this unsolicited testimonial. : " I cannot praise your medicine too much. My wife used to be so nervous that no one could sleep with her, but now, after taking your Drowsy Drops, any one can sleep with her. "

* * * * * * *

" You see the doctor over there ? He speaks only in terms of millions. "

" Is he so rich ? "

" No, he is a bacteriologist. "

* * * * * * *

Doctor after examining a fair young lady from head to foot :

" I am afraid we have been on a wild goose chase, madam ; your trouble is after all some congestion in the throat. "

* * * * * * *

" Now frankly " the surgeon warned, " I must inform you that this is a very serious operation. Four out of every five patients die under it. Is there anything I can do for you before I begin ? "

" Yes, " said the patient, " help me on with my Shoes and Pants. "

* * * * * * *

Tailor, returning after a funeral: " Sure, doctor, you must be a very happy man. "

Doctor : " Why so ? "

Tailor : " Because you will never have any of your bad work returned. "

* * * * * * *

What is the difference between a legal practitioner and a medical practitioner ?

To the lawyer, the client brings his worry and money, leaves the money and takes the worry back.

To the doctor, he brings his worry and money, leaves the worry and takes the money back.

* * * * * * *

" I think you ought to stop taking this sleeping pills every night, " the doctor told a patient. " They are habit forming. "

" Habit forming " retorted the man. " Nonsense, I have been taking them for twenty years ! "

* * * * * * *

" Well, doctor, I want to take one apple a day, and keep you away. "

" If you persist in your bathless habit, sure, you will keep every body away. "

* * * * * * *

An epitaph :

Here lives the body of Mary Ann Lowder,
Who died while drinking a Seidlitz powder,
Called from earth to her heavenly rest,
She should have waited till it effervesced.

* * * * * * *

The dentist asked for five rupees after removing a tooth.

"Your rate is only one rupee per tooth" protested the patient.

"Yes, but by your shouting and yelling, you scared away four of my patients in the waiting room."

* * * * * * *

Doctor after examining the patient :

"I don't like the look of your husband, Mrs. Smith."

Mrs. Smith : "Neither do I doctor, but he is our main support."

* * * * * * *

"When sick, I go at once to a doctor. Doctors have to live. After getting the prescription, I go directly to a chemist. Chemists must live. When I get home I throw the medicine on fire."

"Why ever do you do that."

"Well, I too must live."

* * * * * * *

Compliment to the Doctor :

A woman recovering from the effects of Chloroform complained "Doctor everything was so beautiful, till I saw your face."

* * * * * * *

Patient : Who is the doctor that is going to operate on me?
Nurse : Kilpatrick.
Patient : He shall not operate on me.
Nurse : Why not ? He is an able Surgeon.
Patient : May be for others. Not for me, my name is Patrick.

*(A Collection.)*

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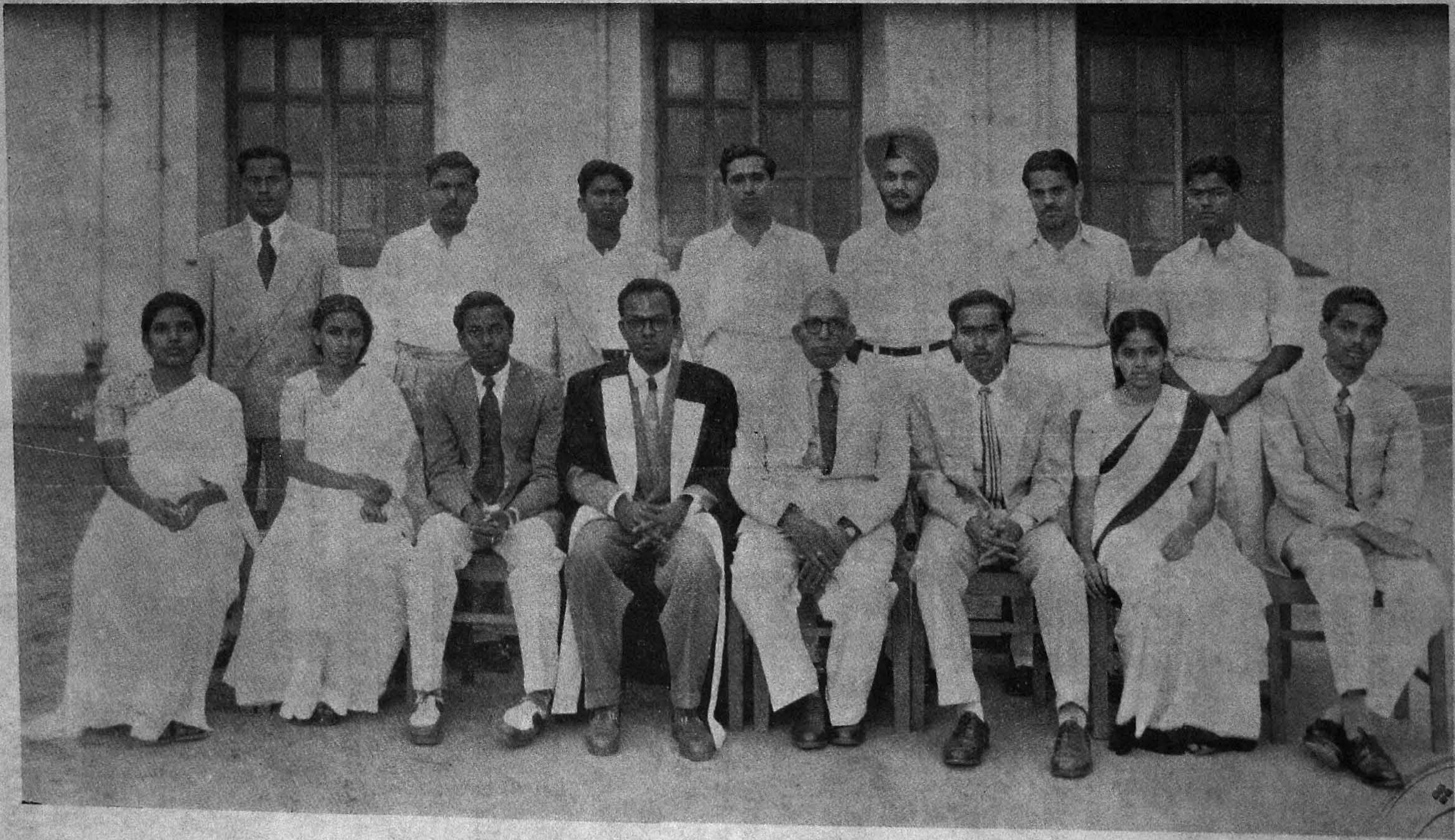

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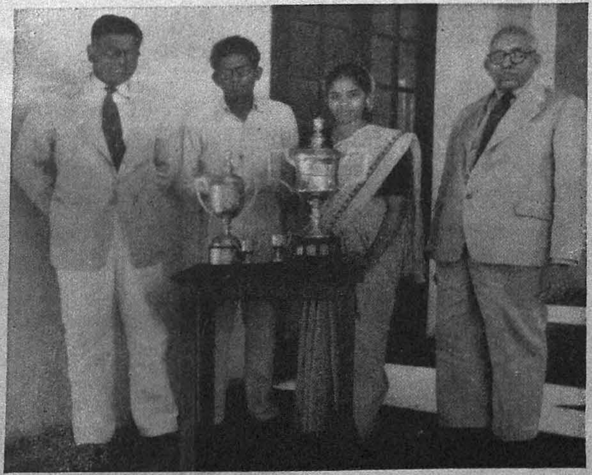

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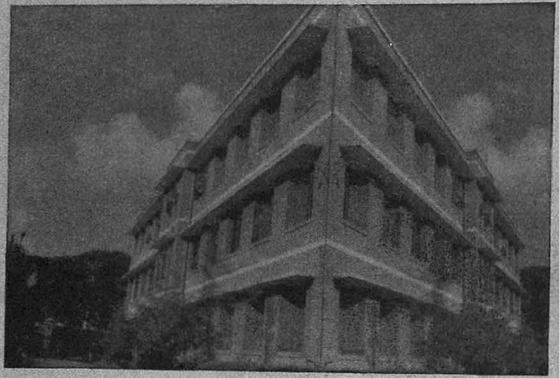

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General Secretary Presenting Farewell
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# A Stranger in the Train

*By*
G. LAKSHMIPATHI.
*Third Year.*

THE compartment I was in, was awfully crowded. It was supposed to accommodate ten people, provided, they were extremly emaciated, had no earthly belongings, and stood with one leg inside and the other one hanging out of the window and, nobody was blocking the window. There were at least four times the number, and there was barely enough space for one to extend his arms in front (assuming, one wanted to do such a silly thing as that in a crowded compartment). The compartment had strangely two doors on the same side and it looked as though it had been built just for fun before the discovery of steam power.

I had a comfortable corner all to myself (only I had a vague feeling someone was sitting between me and the corner). I had, at first, rushed in to the compartment with an idea of occupying one of the upper berths and I would have succeeded too, but for the presence of a dead body lying on it. I have seen many things lying still, in my life, but this one was as stiff and still as the Rock of Gibralter, before a storm. I did not touch it of course . . . there will be some hubub . . . lot of confusion . . . a trial . . . and then I will be hanged one fine Monday morning after a hearty breakfast. So, I jumped back and took a corner seat.

By this time, people had started rushing in. There was an excursion party of about twenty-five students—all between ages of twenty and twenty-five (at the height of their masculine growth). There was their professor, such a fat gentleman that every time he breathed two students kept going out and coming in through the windows. All the students were talking except one fellow, who was playing the mouth organ. There appeared to be some confusion in their party. One half of them had got in to some other compartment and the people in my compartment were wondering whether all had got in and whether they had managed to lose their Assistant Professor after all!

Then, all of a sudden, one student from the other compartment came running to ours, and shouted that there was enough space for all in the other compartment and so with shouts of joy (from both the students and the rest of us passengers) they left. In a few minutes time the bell rang, the Guard waved the light or flag, (or did whatever he does) and the train started moving. Just then one strangely dressed fellow came running up the platform, caught up with the train, and jumped into our compartment.

The fellow came in and took his seat opposite mine. He attracted immediate attention because he was dressed in a stripped shirt without a collar and he wore a cap made of the same cloth as the shirt. He wore a dhothi below and had no slippers on.

He smiled broadly at all of us, extended his left arm and said addressing the passengers in general "Look at my little finger". With that he wagged his little finger a little bit, as an additional attraction. We all did. Not that we were over anxious to have a look at his little finger, but only the fellow was built on the same lines as a healthy baby with generalised oedema. Also, as I said, he was dressed rather oddly. "Now," he said extending his hairy leg, "Look at my great toe for a change". Of course, I was infuriated. I suppose everyone was. Why the hell should we keep looking at some fellow's little finger and great toe all through a train journey when we all had a perfect set of little fingers and great toes to look at, I could not understand. I felt like getting up and slapping the fellow on his cheek, but, as I told you he looked like one of those people who if they take it into their heads, can smash you with their bare palms, till you are deceased. So, I weakly smiled and looked

around. Everyone was smilling too, except for one fellow sitting near a corner, who looked like across between a Pindari with unilateral facial palsy, and a rather homely looking thug with a squint eye. This fellow had a moustache adorning his upper lip, which resembled a second-hand tub-brush, and gave the impression he was responsible for the dead-body lying on the upper berth. He simply looked at the capped fellow for a few minutes, grunted, and then looked away.

The fellow with the cap sang loudly for some time. (Such a pathetic voice he would have got a consolation prize in any music competition). Then the music abruptly stopped. "Ladies and Gentlemen" said the man in the cap, looking at us one by one, (There was only one lady present who was sitting at some distance from me, on the same bench. Her son was lying between me and her, and the little brat gave me a kick on my thighs in moments of ecstacy, but the tragedy was he got these moments every time he did. All his mother did was to tell him every ten kicks—"Don't kick 'uncle' you naughty fellow, otherwise 'uncle' will hit you." She did not know, that 'uncle' would have thrashed him to death, if he had persisted.) "I was born thirty-five years ago—the first breech presentation in ten years—in West Bengal" said the man addressing me. "When I was born my father said that he had hoped it would be an abortion. He died ten days after—committed suicide,—he did, because I was slightly hydrocephalic—and my father had hoped for a handsome infant. He took very strong alcohol to kill himself. My mother told me he wrote his will only a few minutes after he had taken the drink—because in alcohol poisoning will power is lost only after half an hour. Anyway he tried to kill me with it first, but Gentlemen, as you all know "one man's poison is another man's food" and so I felt nice the next few hours and that was all".

The train was passing through a tunnel and the man stopped talking. But for the noise made by the train passing through a tunnel, there was pin-drop silence in the compartment.

"I was a naughty child" the man continued, "I broke most of my bones at least once. I broke all breakables in the house. The last thing I broke was my mother's heart. She died when I was only six—the day she learnt I had planned to elope with our neighbour's daughter. So I was left all alone in this cruel world—an orphan." At this point the man bent down his head and wiped his eyes. I simply looked down and smiled to myself. "What about your relatives?" I asked, because, the fellow had been addressing me throughout.

"Oh, yes, only one" the fellow said, "my elder brother. He was my elder by ten years. That fellow was more mischievous than I was. He used to fight with one and all, from young urchins in the road, to old woman with general paralysis. The age made no difference to him. As training at home, he used to chase me around the house with my father's pen-knife. My father wanted the pen-knife himself very badly, but was afraid to ask for it. My brother had other peculiar habits too. He was a great collector. He collected all sorts of rubbish—from old door mats to Telephone-directries from Public-telephone booths. "Let him, let him", my father used to say, "when he grows up he will collect money". He did. When he was fifteen he collected one hundred and fifty rupees from my father's purse, and disappeared. My father felt very much—hundred and fifty rupees was no joke in those days. Anyway I have not seen him since then".

I laughed aloud. It was such a funny narrative, that I wanted to hear more of it. But the man had suddenly grown silent. He spcke after a few minutes. "What are you doing now?" I asked. "But I love you Kamala", I said, "You must come with me." "No, No," she said. "It is such a dark night, and you are a rogue". "Show mercy. It droppeth as the gentle rain from heaven upon the place beneath".

"Who said that?" I asked. I could not make head or tail of it. "What is all this?"

"Shakespeare" said the man briefly.

"But, who is this Kamala?" I asked.

"My teacher at school. I loved her very much. I would have married her too but the age difference was much. I was seven years older".

"Whom did you marry?" I asked.

"Not Kamala,—definitely not. Her husband took very serious objection. I married a distant relative of mine—daughter of a thrice removed cousin of mine. I had removed him thrice from my house, employing a different trick each time. But the fourth time he said he would go only if I married his daughter. I married. She was alright—my wife was—but not very healthy. She had constant ear troubles. She used to hear ringing noises continuously, just like a telephone bell. First few nights I kept saying 'Hallo, Hallo'. Doctors call it Shinnitus or Tinnitus or something. For three months after marriage I could not sleep a wink, with her lying by my side. It took me so long to get accustomed to the noise. We tried all sorts of cures. Nothing helped. But, finally one quack poured an yellowish fuming liquid into her ears, and she heard no more ringing . . . any noise, as a matter of fact. She had become stone deaf."

The fellow stopped and looked askance (whatever it means) I did not know whether to smile or look sorry. I was convinced the fellow was not very bright. So, I looked at the passenger sitting next to me and winked (A very foolish thing to do because it was the lady with the child). So, I looked back at the fellow opposite with a mixture of the two expressions referred to above. (The reader would like to know at this stage "what about the tough looking guy in the corner? What did he say?". He did not say anything. He had got down at some station and had gone home to his wife and children and had lived happily ever after. He has no more part in the story).

"The Great Wall of China, is one of the wonders of the world" said the man.

"Yes, of course, I know" I said.

"Anyone does" said the man. "It is one of the facts of life. It is nearly two thousand miles long and is twenty feet broad at any point" the man added.

I nodded.

"It is the only man-made structure, that is visible from the moon, excepting of course Mount Everest".

"Yes, that is alright. But why are you telling me all about this Great Wall of China?" I asked.

"I built it" said the man brightly. "All alone. All but me had fled".

There was a period of silence following this informative talk. I smiled to myself and kept quiet. But I wanted to hear more of his Autobiography.

"You were telling me about your life," I reminded him. "How your wife became deaf and all that".

"Yes, you are right" said the man, "she became stone deaf. But the quack—he became stone dead—I poured this liquid right on his face—Anyway, that is all not important. Two years later, I became a father. But then I was in prison. When I was undergoing my sixth month, my wife was undergoing her ninth".

"Why did you go to prison?" I queried.

"Politics" said the man, "family politics"—I slapped my mother-in-law. She told my wife, I was born a Hydrocephalus. My wife hit her too. Judge sentenced us both for six months each. My wife walked out. She had not heard a word. I stayed on, for full six months. Have you been in prison?" he asked suddenly.

"No," I said, "never".

"I have been" he said, "when I came out I was a changed man. So changed, even my wife could not recognise me. I had grown a one-foot beard and had a big bushy moustache adorning my upper lip. I felt very ashamed. I wanted to commit suicide. I got hold of a medicine chest, took out four suppositories and swallowed them. They were made of tannic acid and I was later told they would only cause constipation. But taken through the wrong end I got severe diahrrhoea".

"He, Ha" I laughed "what did you do?"

"I went to the hospital to get some tablets for my diarrhoea. But what a queue, what a queue—I stood in it for such a long time, that by the time, I got near the Doctor, I had got "Q" fever. I got admited".

"I hope it was not very troublesome" I asked.

"Not at all" he said. "Four days after admission, I died".

I laughed aloud for full three minutes.

"But then how are you here?" I asked, roaring away with laughter.

"I am a ghost" he said calmly and disappeared.

I was stunned—for two reasons—one, I had dashed my head against the window while laughing—secondly, there was a nail protruding out of it. Thirdly, the fellow had suddenly disappeared.

"He had disappeared" I shouted at the top of my voice. All passengers woke up. "Who has?" asked a man, sitting opposite the lady. "Why did you shout like that? You idiot".

"The man who was here, all the while" I explained, pointing out to my opposite seat. "It was not a man". The passengers all looked puzzled.

"No, No. Not a woman either" I said, understanding their difficulty. "It was a ghost. He has been talking to me all while. Suddenly he disappeared."

The corpse lying in the upper berth sat up and roared with laughter. It was not a corpse—I am sorry, I misled the reader. The fellow had only been deeply asleep.

The train slowed down and came to a stop. It was some station and just as it came to a dead still—a fellow in Khaki uniform jumped into the compartment. His face was strangely familiar. "Ladies and Gentlemen" he said, "one mad cap has escaped from the mental hospital. Don't be worried. Not a hurting type. He was only an author. Does not bite or anything. Have any of you seen him?" Ah he came into the compartment. The whole crowd spoke up. I could not follow very much.

"He has been talking and laughing throughout" said one fat fellow. "Just a few minutes back he was laughing out very loud".

"He winked at me" said the lady, "Please take him away."

"He gave a shout a few minutes back. I woke up just then from my deep sleep" said an old man, not far from a really good d-e-e-e sleep.

Anyway, I could not make anything out of all this. "I saw him" I explained to the man in khaki dress. "He was talking to me till he disappeared. Don't worry. He is dead".

"Come on, come on, Don't waste my time" said the fellow.

I went quietly.


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*Professor of Bacteriology and Principal, Andhra Medical College. Vizagapatam.*

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# The Skin Man

Some may sing the Surgeon's skill—he wields a wicked blade,
While not a few prefer G. U.*—('tis not a tidy trade);
Pure science has her accolytes—a brave, devoted band;
But I'd rather be a Skin Man, and with the Skin Man stand.

Outside the Throat Room's dreadful door the knitting women wait,
While still unseen the Guillotine keeps up its ghastly gait;
Like plums upon the dewey grass the tender tonsils fall—
But neither they nor adenoids intrigue my thought at all.

The Skin Man never is aroused as breaks the morning pale,
By vehement parturient or ailing infant's wail;
Nor is he snatched from Morpheus' arms, from some delecious dream
To aid some old prostatic case who cannot start his stream.

Behind his broad expanse of desk—mayhap of tropic teak—
He views the rash and takes the cash—and does it week on week
His mind is calm his spirit blythe, his future is assured,
For though his patients oft come back, they're never quickly cured.

With ointments bland he tries his hand to soothe—but ere too late,
If soothing makes them worse again, then he can stimulate;
If stimulation aggravates, his course runs ever smooth,
For he can cease to stimulate, and start once more to soothe.

No paladin of Arthur's age, no gleaming dressed knight
Of old romance had such a chance his lady to delight;
For him that blush of damask rose, for him that downcast eye,
Who drives the ringworm from her cheek, the itch-mite from her thigh

The lady fine, the concubine, the virgin and the priest
Discard their pants in Bacchic dance—from lues now released.
Tabetic and paretic in corybantic maze
Surround the guy that got them by, and raise their songs of praise.

So farewell dermatitis, from you forever free;
Goodbye the bugs that bite us—the louse, the tick, the flea;
Oedema, erythema, and pruritus ani too;
Like driven snow from head to toe—we bid you all adieu.

---

*Genito—urinary

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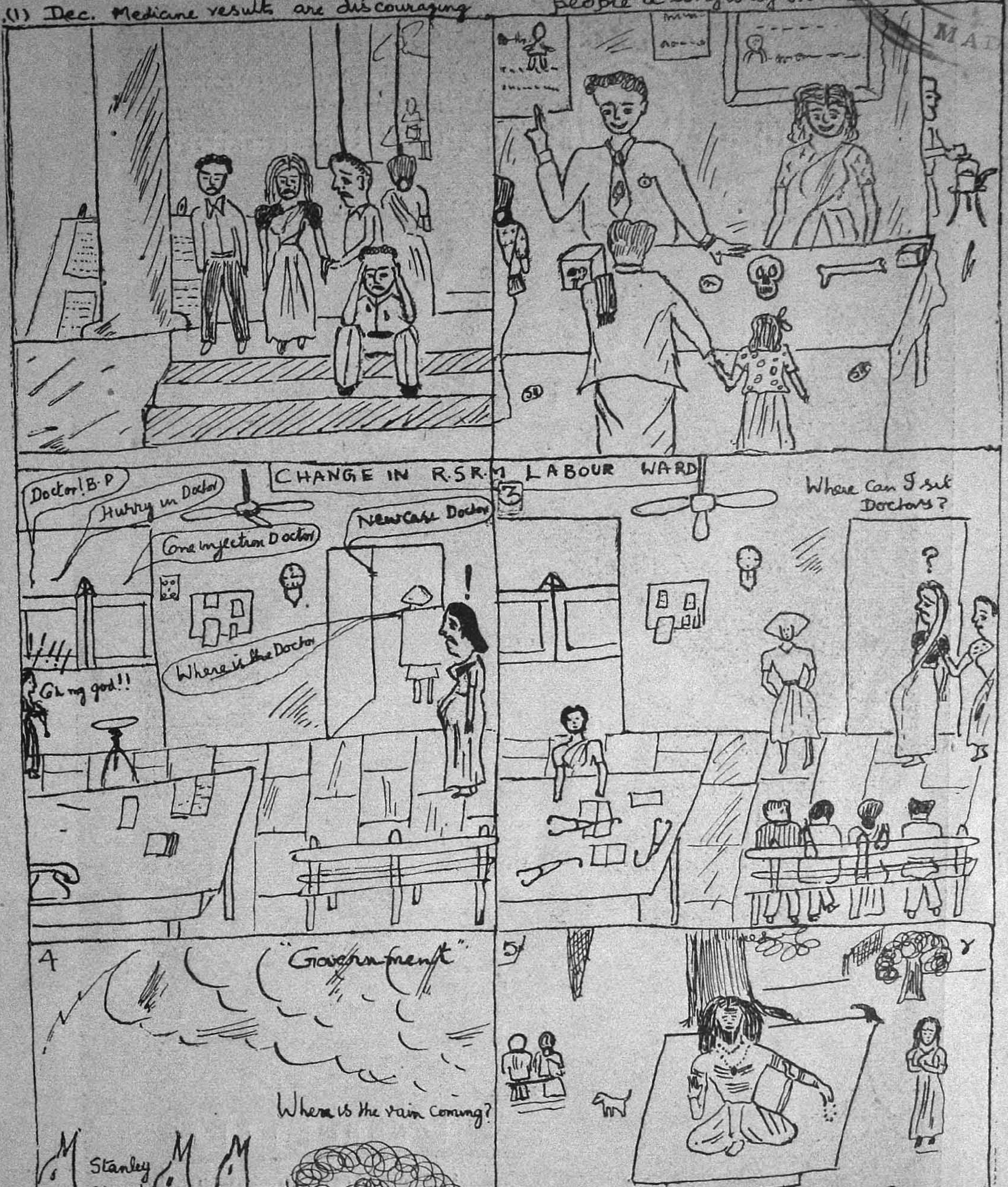
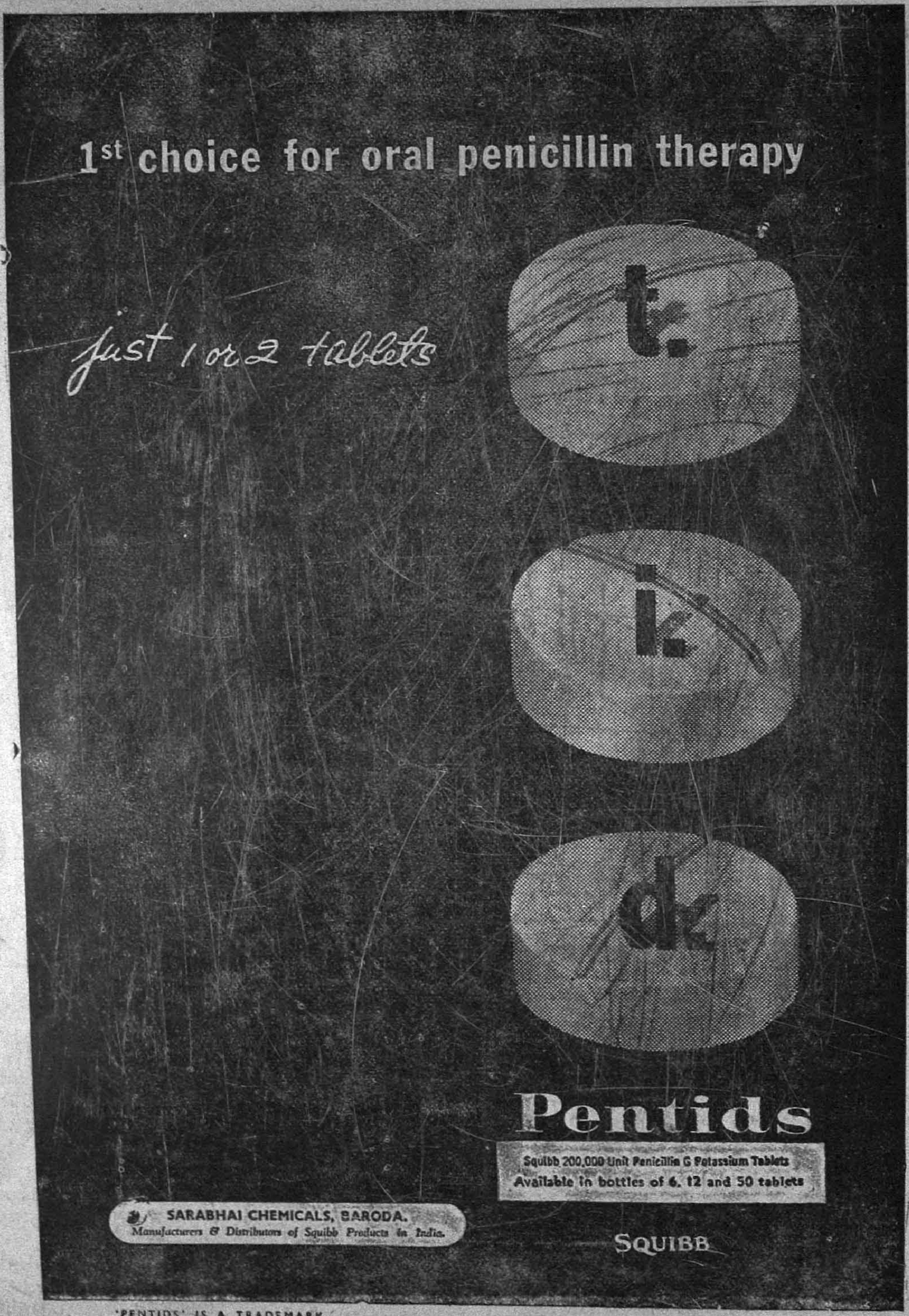
RECENT NEWS IN THE AIR

(1) Dec. Medicine results are discouraging

(2) Working in the Exhibition has helped people a longway in the Exams.




Students are eagerly awaiting the arrival of Rains. We learn there is a Sat-Sangh in Ladie's Hostel.



'PENTIDS' IS A TRADEMARK

# Animality and Rationality

*By*
E. THEODORE KING,
*Third Year.*

VIJAYA was an atheist. He didn't believe in God and laughed at those who did. He couldn't stand the sight of a temple with its Siva nor could he tolerate the rejoicing of hymnals in the praise of Christ. To him, all religions were a lot of trash, and he scoffed at the world for being God-crazy. "The swine", he said, "the bloody swine!"

Vijay was my best friend. He was a tall youth, goodly looking, with dreamy eyes and sensual lips. He stood thin like a whip, sometimes menacing and dangerous, but most times gay and merry. His life was just the pleasures of wine, the caresses of women, and the melody of song, but he had a touch of the philosophic in him about these things that baffled my understanding.

"What do you get out of wine, women and song, Viyay?"

It was nice to see him grin, a sheepish kind of grin, bashful and shy and yet a little bold and sensual. His eyes would dance with amusement and you felt like a stupid fool before him.

"Wine sparkles and makes you oblivious to everything around you. It relieves the strain of tragedy and distrust and creates a love for living. Women tempt the flesh with a temptation that is painfully soothing. They make your heart ache for more and more, a terrible ache of longing and desire. Song carries you to the realms of oblivion. It bubbles the joy in your heart. If you have tragedy in your life, song gives you comfort and understanding; it is the best balm for these thousand weary worries that sallow your face and wrinkle your skin".

"You're mad. How can you philosophise on such things?"

"You asked me my opinion and I gave it to you. Now you want an argument".

"Good God, no. But tell me, Vijay, why don't you believe in God?"

He had a way of grinning before answering a question.

"Tell me why I should".

"He made the world and He made you. He is the living force, omnipotent, eternal, a vital necessity for our lives. He is everything you can think of or know of or tell of, the supreme being, called God, called Allah, called Brahma, called Ahura Mazda".

"You are confused, my friend. There is no such thing as God. If there is, he is a malacious, evil-looking, stupid fellow. Take the Christian God. He puts Adam and Eve in the Garden of Eden and tempts them with the fruit of good and evil. He loves Abel more than Cain, and lets Abraham lie and blasphemy and even debauch. He lets Moses lead a nation and just because Moses was irritated on one occasion—his short temper was notorious and God knew it—he would not let him enter the Promised Land. He was a jealous God and you know how jealousy breeds an inferior, narrow and debased mind. His son, the so-called Christ, was a terrible sadist. How he drove the money-lenders out of the temple and with what a temper! His cursing the fig-tree was most unjust. He ought to have known that it was out of season to bear fruit. Take the Hindu pantheon. Not one single God is exemplary. Indra is a debauchee, Narada a tale-bearer, Rama a suspicious fool. Krishna—he is a flirt but they give a mystic meaning to his flirtation, and when *we* do it, they call us skunks. Siva destroys the world in his glut of passion and Murugan chases girls round the countryside. Then Islam. Mohammed was a teacher, not a priest. I cannot understand how anyone can invoke the name of God and preach blood and vengeance. *Jehad*! A holy war against non-believers! Its ridiculous. Its stupid. And Ahura Mazda. The Good One! He gave joys, yes, but he could not vanquish Ahirman—the devil of Parsi religion. He did his job and let the other do his job without interfering, and quietly retired to his

old home in the mountains. Buddha—he doesn't mention God. He follows a set of rules which are difficult to follow".

"Vijay!" I was stunned. It never occurred to me that this was a youth who in spite of wine, women and song, had a terrible craze to read books on religion—read them like a disinterested, dispassionate man, somewhat like a sexless man who looks at a woman and says what a mass of flesh and bone she is though beautiful, and arguing again that beauty was only skin-deep. His library was a stacked package of books—Bhagavad Gita, Bible, Koran, Zend-Avesta, Upanishads, Adi Granth, Dhammapada, Agamas, Books on Hindu, Chinese, Western philosophy, books on metaphysics, books about mysticism, a terrible lot of books that used to make my head spin.

One day he asked me, "Will you come to the beach? We'll look over some girls and may be seduce a couple."

"No, thank you. You go, and best of luck to you. I'm not in a mood".

"I wonder if you'll ever be."

I wish I had gone with Vijay that day for I didn't know I would never see him again. He just vanished and it pained me in the months that followed. I felt like a lost man, and without him life lost its savor.

But I was not idle. I became a doctor, post-graduated in England, specialised in tuberculosis and returned home to build my own sanatorium. I fell in love, married, and had a quarter of children. The past was wiped away and I settled down to enjoy the fruits of my former years. Life flowed by.

People came and people went, came in with ailing fevers and dying agonies, and went with a sparkle in their eyes, and a zest to live a future healthy life. So many people! And twenty years! Not a single ill-spent day. It was a busy life and I revelled in my work. Every morning I went round the wards, attending on the patients with paternal care, cheering up the depressed and the disconsolate, and taking in the bawdy humour of those who knew how to joke and look gay inspite of suffering. The people became part of my life and I became part of theirs. After they left, they wrote to me extensively, and it was embarrassing when they gave me importance and considered me a god-send. I was only doing my duty and I had always wanted to be a T.B. specialist and I was but following my ideal and my goal. They couldn't understand that. They thought a great deal of me, and since I could do nothing to make them think otherwise, I let it go at that.

There was one patient I liked a great deal. He was an Indian but he had a Tibetan name. He was a handsome man with smiling eyes. His face was calm but it was the face of the divine. It suffered the agonies of the disease but it never showed. It held a calm that was comforting. I sometimes found myself falling in love with him like a schoolgirl. He made me feel strangely exhilarated, and the glow on his face made my own worries light, and everything I considered a big nuisance became insignificant.

One day as I examined his chart and found dramatic improvement in it, I looked at him and saw the healthy glow, the bright, flushed face, and the kind, smiling eyes. Then I saw the mouth twist slightly, in a sensuous way, and I almost screamed. I remembered Vijay and he came back into my memory like a flash. I stared at the patient wondering if he was Vijay, twenty-five years older than I had last seen and known him, but not a sign on his face to show that he was not he. But I couldn't hold myself.

"I have a rascally feeling I know you," I said, "but I don't know you. Like any other patient you have come and like any other patient you'll go. You say your name is Nang Po, but I wish it was Vijay. You would mean a lot to me".

The brows furrowed for a moment. He looked at me without any emotion. "Why?" he asked.

"I had once a friend by that name, and he was a devil of a fellow. I loved him very much. He was so gay and debonair".

"I suppose he was an atheist".

"No. He doubted the existence of God, that's all."

"What happened to your friend?"

" He disappeared ".

The patient grinned. The grin spread across his mouth and made his eyes bright and sparkling. He was the handsomest man I had ever seen.

" Will you come to the beach? We'll look over some girls and may be seduce a couple."

I startled. Those were almost the last words Vijay had spoken. I swooped down on him and shouted much to his embarrassment. " Vijay ! "

" I knew you when I came here. But I didn't want you to know me. You still have an eagle eye ".

" Its a long time, Vijay, a very long time ".

" I do not know. I have never felt the passage of time ".

I sat next to him. Tears were flowing down my eyes. I couldn't contain my joy. I wrung his hands, grew excited and tried to mutter and mumble something but only incoherent words came stumbling out.

" Vijay ! My friend ! What happened? Tell me, Vijay ".

" What a sentimentalist you are ! What would you want to know? "

" Where did you go? What happened? Oh, Vijay, I'm happy to see you. Tell me everything ".

He looked at me straight. But he did not look at me but looked past me. I dried my tears for I felt a vague fear. His face was set but it was not like a mask. It was a genial face with a terrible purpose. Then slowly he said, " I found God ".

I thought he was joking but it didn't sound like a joke. He was grave. It was really a shock to hear a godless man talk about finding God.

" Where? "

" *In the heart of a woman* ".

" Woman? "

" There is nothing contemptuous about woman. Woman has always been the problem of the universe, yes, an unanswerable question to this world, a kind of secret that eludes you. She is temperamentally more emotional, more credulous and more superstitious than man. But where idealism and religion are concerned, she is a rabid fanatic. *But she is really a goddess...We worship her as a mother, revere her as a sister, love her as a wife, and fondle her as a daughter. She is the strangest, finest creature of creation, and next to the mind of Man she is the weirdest* ".

" You still philosophise, Vijay ".

" Philosophy is an escapism. But this is the truth."

" How did you find God in the heart of a woman? "

" I went to the beach that day. You should have come with me. The sun set in the west and the colours in the sky cast an eerie glow on the wide expanse of the ocean. The sea rose and fell and I was thrilled. Next to the mountains, the sea is a soul healing balm. There I met Varthini ".

" Nice name ".

" Nice girl, too. A strange girl. She was a student but I never asked her what class or which College. She was looking at the sea like a lost soul. I went up to her and she didn't even look at me. Not till I made conversation.

" She was a lovely woman. Her nose was short but upturned. You felt she was a proud girl—she was in a way—but the nose signified an immense snobbishness. She had very expressive eyes. Every mood showed in her eyes. The pain, the ecstasy, the sorrow, and the joy. You could even find out what passed in her mind, if you looked at her eyes carefully. Her lips were small but neatly curved. They seemed to begin and end with definiteness. But her teeth were uneven. She had a small face for her big body her body being huge and monstrous. She was sexy. Very sexy. But she was also a dancer. When she talked, she moved her hands, and her fingers formed symbols unconsciously. She tried to be normal. She was a normal girl but she couldn't help being the dancer all the time. But there was a strange mysticism about her. She was very erudite. But she wasn't like me. I joked about everything. She was serious about everything.

" I made conversation, simply. It was easy. I was a veteran. You know. But I didn't expect what she said. ' Are you rich ' ?

"I was taken aback. 'Very', I said. 'Why'?

"'If you are rich I'd leave my past behind and seek a new future. With you'.

"'Have you a bad past'?

"'No. I loved a man and betrayed him. I want to forget it. Him, too. If you are very rich and can take me away from here, I'd leave with you—now'.

"'Where would you go?'

"'Anywhere'?

"'All right. Lets go'.

"'It was the maddest adventure possible. Though she said anywhere, she had a destination in her weird mind. We went to Ajanta and Ellora. What bore it was to see those caves and frescoes! But she thrilled. 'Darling, look. Aren't they wonderful? What geniuses slaved here, what supermen struggled and laboured! But look at those frescoes of Buddha. Not just the beauty but the deeper meaning in them. Look at his brow. On it sits a calm, a great silence. It mocks us but that is natural. He has found peace and Nirvana while we are two stupid fools tossing in this idiotic weather of the world. From there we went to Elephanta, Karla, Khajuraho, Hampi Madura, Rameshwaram, Puri, Kasi. Every place important in history or religion. We talked to sages when we met them, about God, about the soul, about the metaphysical aspect of life. In the beginning I was amused, then I got disgusted. But by and by I began to enjoy all this. I was as eager and keen as she was, but she always raced ahead of me.

"I've had women in my life but never a woman like Varthini. Her passion was overwhelming. She was all fire and she gave herself with mad abandon. Sometimes she danced for me. I didn't understand or know a hang of dancing, but as she swayed and moved, I felt a strange chill run down my spine. And she would whirl and fall in my arms and I would hold her and kiss her and have her. She made me mad and crazy. She frightened me. My ecstasy was agonising, my joy was painful. My delight was aching and I would feel wretched even with her in my arms. She intrigued me. And before long, I was in love with her.

"'Vijay, let's go to Kedarnath and Badrinath'.

"'Why?'

"'Why do thousands of pilgrims go there? Lets find out'.

"'They go to worship in a temple'.

"'That's not important. Their piety and their struggle for salvation—I want to know. Let's go, Vijay'.

"We went. It was no pleasure going all the way. It was like going to hell. How could man attain salvation thus? To go through every elemental pain and anguish, every wretchedness and misery, was baffling. But I was impresed by the scenic splendour around. The rivers and their waterfalls, the steep mountain sides and the horrible precipices and the eternal mist—they excited and thrilled. I found something to amuse myself with. The various kinds of people formed a great panorma of life. But how insignificant they looked when viewed against the background of rushing waters and rising heights! Kedarnath and Badrinath! Magic names to conjure up piety in every orthodox Hindu. But there was nothing great about them. I was sick coming all the way. Not so Varthini. This was a new experience to her. And one night she told me a strange thing.

"'Vijay, I feel I am near to God here. It's foolish feeling, I know, but I feel as if I'm near to God. I guess every person who comes here feels the same'.

"'I don't'.

"'You're not every person. You're just you. I'm talking about others. They come here to find God or be one with him, to enjoy the rapture of being near him, and I'm sure they find him. Don't you know what faith is? If you don't, here is faith, Vijay. Read faith. No false colours. No hypocrisy. The soul laid bare. The soul so beautiful. Reality. Vijay, this is a strange place. Now I know why the gods choose this place. Here you can commune with the Almighty. Far away from the madding crowd, this silence here is pregnant with love, joy and faith. Also salvation. Vijay, let's stay here'.

"'I don't mind, darling. But it's better to go down to the plains and valleys below before this place grows on you and disgusts you with its sameness. Once this place

becomes stale, then you'll hate it. Before such a thing happens, let's get out of here'.

"'You don't like it?'

"'No. But what I have told you is not because of, myself but for your own sake. I'll stay if you want to stay. I love you and I won't let you out of my sight'.

"'You're wonderful, Vijay. You're really wonderful'.

"We stayed two years in Badrinath. What I said happened. She was a restless creature and she was tired of the place.

"'Let's go, Vijay. Let's go to Tibet'.

"'Next you'll be leading me to hell', I said a little irritated.

"'Heaven, darling. Don't say hell, it's such a bad word'.

"We came down to the plains. We stayed awhile but having lived in the mountain fastnesses, the plains were plainly horrible to live. I immediately made arrangements to enter the forbidden land. We went via Nepal and followed Brahmaputra for a while. When we entered Tibet after a considerable time, we knew we had found our home. We stayed there twenty years.

"Tibet is an eerie country, but a land of mysticism and mystery. There are more temples than houses there and more lamas than laymen. It's a beatutiful land and I loved every bit of it. The snow-capped mountains lifted your heart and made your spirit soar to regions of bliss and forgetfulness. I never felt so transformed as in that place. Though the climate was cold the year round, it was warm with the love of fellow-men.

"Varthini was very happy. 'You know, Vijay, if I don't die here, I'd like to die here. This is not a land of men and women, it's a land of gods and goddesses. It's a celestial abode'.

"She was right. She was fascinated by the prayer-wheels and the people there, by the strange light in their small eyes when Buddha's name was uttered, the deep reverence, and their joy and love. We began to understand this mystic religion, that had found a home amongst the simple, but as usual, I was sceptic. I was an atheist first, a seeker after truth next. Not so Varthini. She was after something. And she found it. When she did, she became a nun.

"Having found the joy, she began to pound that into me. I hated Buddha and had always considered him as a no-good, useless doctrine-maker. I was a man first, virile, strong, tempered like steel. I couldn't stand passiveness. They all taught how to be passive, not to retaliate, to live a life of non-interference. But what I did not know was the great moral courage required to follow these sayings. I required more than ordinary guts. Buddhism was a great doctrine. The chant: '*Buddham Sharanam gachami; Dhamman sharanam gachami; Sangham sharam gachami*' was like music to everybody except me, but soon I too came under its spell.

"Varthini when she became a nun taught me all about Buddhism. When she found I wasn't responding, one night, in the dread, dark loneliness of the house, she came out with an astonishing theory on God and Man.

"I looked at this man with compassion, then with joy. His face underwent all the experience of the past, and there was a livid brightness in his eyes which lit up his whole countenance. He gave me his hand to hold: it was hard and warm. I had never known the bliss of friendship till now and as I realised how much I loved him, my heart surged. After all, a friend is a second self."

"What was the theory, Vijay?"

"'The belief in God is optional. It's not a forced medicine for you to swallow. It develops as a feeling, and when you grasp it, a new thought reverberates, and a new life begins unconsciously. The only sensation you get is one of thrill and unexpectedness, and a great joy forces itself in you in spite of yourself. Don't take God as an outsider. You make him a spectator and hate him. Take him as something in you, as something part of you. And the idealism of life is important to retain him. Bad thoughts and actions are apt to drive away God, but when kindness and love is imbued in you, something stirs in you and makes you rise above the common man. Your idealism of life may lead you to immortality or to the lowest depths of shame and degradation.

"'You may not like to believe in God, but it is necessary to believe in yourself. Since Man is a compromise of good and evil, he finds it hard to retain that compromise. So he struggles and battles with his self, till he

emerges a victor with good in him or dies a death of morbid wretchedness. The worldly man in you craves for material wealth, the saint for spiritual. And if the saint in you towers, you are another Buddha, another Christ, another Krishna, another Mohammed. Remember, all these spiritual leaders were wordly men in the beginning, but out of the murk they rose to the dizzy heights where we immortalise them to eternity.

" 'Why should Man be a Buddha or a Christ? Why should he struggle with the evil forces of the world? Why should he be taught morals and clean etiquette as he grows up? It might be difficult to find suitable answers, but we can reason with some commonsense. If evil rules the world, we distort life, and everything looks gruesome. It becomes revolting to live, something like nausea, and a frightening shudder of ugliness develops. Evil is like garbage which we avoid, it stinks and makes our heads reel. But it stimulates us to walk the clean paths, the soft-scented thoroughfares and avenues. That's why we aim at the immortality of the soul, the sublimity of the mind, and the nobility of the self. That's why we preach moral codes and tell you why Buddhism or Islam or Christianity or Hinduism or any other religion is great. Religion is not merely mouthing words, it's a reality, a salvation. It transforms illusion to reality, hatred to love, and misery to happiness'.

"I listened because I could do nothing else. But it set me thinking. I began to meditate. I began to go into the mountains, thinking, reasoning, trying to find answers for the eternal questions. I spent my time in the monastries, I went out far into the cold snows, I climbed peaks and gazed at the lofty world of eternal sunshine. I became silent and sometimes I would look at Varthini in a strange way. I guess she understood.

" 'You are lucky, Vijay', she said one day. 'One day you will find God in your heart. Me! I have found peace but not God'.

" 'Isn't peace God?'

" 'It could be. But I'm not sure'.

"Three years later, she died.

"I felt horrible after she died. I lost myself with frenzy. I would go to the mountains and cry out to the void that I was not unhappy. Then I would set to think. Did Varthini die? Or was she immortal? Or did she become one with Brahma? Or did she transmigrate to some other dwelling? Pondering on these things, I began to find the great haze in my heart and mind slowly shifting away. But nothing defined behind the haze. Then one bright night, the moon looking so pale and silvery, I sat on a small peak and looked at the heavens. Then I found God".

"How?" I asked breathlessly.

"As I sat, I sensed a strange beauty around me. My head began to spin, and suddenly became blank. There was no more haze there. I could see everything with clarity. My body quivered with strange delight. I felt light, terribly light, as if I was a spirit. Then I saw a light. A speck it was. But it grew and grew. It wasn't dazzling. Just a light but you could see through it. It was like glass. Then suddenly it struck me that this light was my soul. I looked at it hungrily. It moved towards me, and came nearer and nearer. But before I could utter anything it had enveloped me. I didn't know anything after that. I had collapsed.

"When I recovered, I came back to my hut. Now there was no sorrow in me. Varthini had taught me to believe in an unbelievable thing and before she died, had told me that I would find God. It was her belief that probably was my strength.

"I would have stayed in Tibet if I had to, but I was suffering. I had been suffering for a long while, and as the years glided it was unbearable. I decided to go down to the plains, see a doctor, and find out. I did, but to my horror he told me that I had tuberculosis of the lungs. He advised me to go to you. And I came here."

"And I didn't even know you".

"I didn't want you to know me. It would have been better had I remained incognito. But I should have known."

"What?"

"How you loved me. I didn't know I meant so much to you. But it makes me glad to have met you again".

"Vijay, my friend! What did you learn from the experience?"

"Religion is nothing but love and truth, but it's all the difference between animality and rationality. Religion is faith, what you believe in. *And the finding of self is the finding of God*".

A fortnight later, Vijay left, without a word, without a farewell.

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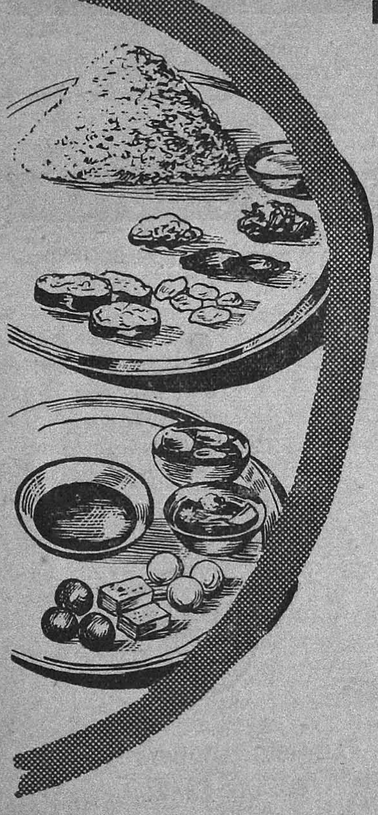

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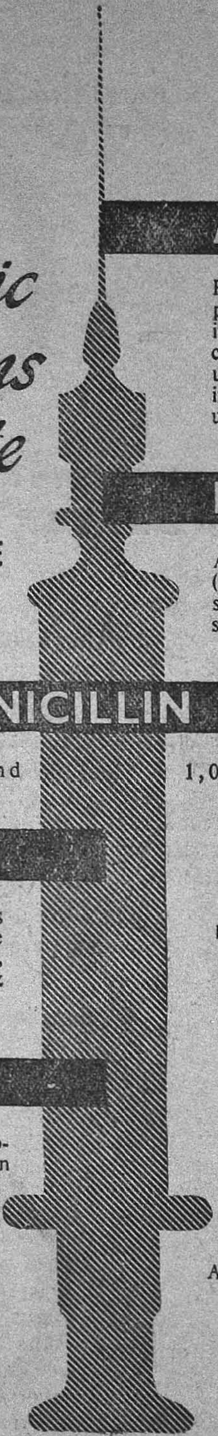

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# The Haunted Valley

*By*

T. S. RANGANATHAN,

*Fourth Year.*

THOSE who go to the west will never fail to carry the pleasant and horrible memories of their visit to *Thachan Kadu*, a lovable spot in the western ghats. An unsolved mystery surrounds the valley around it. As the train passes through the bottom of the ghats one could easily find numerous hillocks scattered on the right side of the railway line. If you turn to your left and take a long curve you will find a huge white tower sprouting from amidst the scattered thickets of trees and it is about this tower hangs the mysterious story.

I was returning to my native place after a long period of twenty years with my newly married Latha. I was gazing at the wildly running trees through the window. Latha was sitting beside me, leaning her hand over the sill. The ooing breeze played over the waves of her curly hairs and blasted the jasmine odour into my nose. Her looks were not so amazed as mine—they were simple. After all this is the soil which had been looking ever since her birth, unlike me who had been living most of my life outside my native land.

All of a sudden I was surprised to find the passengers in my compartment closing the windows air tight. Latha asked me to draw my head inside to close the window saying that it was very very cold. "Some thing must have gone wrong with these people" thought I. Otherwise why should they feel the cold so much when I alone was quite normal. Anyway I tried to doze a bit by hardly pressing my lids: but sleep seemed far from mine eyes. I began feeling the sultriness and tried to open the windows when Latha actually sprang over me crying "Oh don't open it now! Let the train pass through the Haunted Valley". Her body was shaking with fear despite her efforts to suppress it.

The word 'haunted valley' that too from the lips of an educated girl like Latha sounded quite odd to me. I could find by her simple and silent demonstration that she was terribly sick at heart. I tried to calm her restlessness and she told me the following story of the "Haunted Valley".

This story which you may believe or not has been told from one generation to another in the west. Each mother, as she tells the story, may be, to her dozing child patting on its back, feels the life and thrill of it, though she might be repeating it for the *n*th time in her life. She never pauses even for a while to scrutinize the truth of it. I relate the story as my wife Latha, related it to me and as it is being told in the west to-day.

* * *

Zamindar Rajan, for the first time in his life of twenty-eight years began feeling disgusted of his surroundings. An enthusiastic and energetic lion, as people in his *Zamindari* very often called him, whose sole complaint was, that the day was of only twenty-four hours, for the first time seen lounging moodily in the balcony. His *shikari* rifle, which had not parted with his shoulder before was lying uncared for on his left side.

"Woudn't be better" he queried unto himself, "if I had consented to Rama's request"—this was the question which was eating his mind all these days. He didn't even dream that his wife Rama would leave him and go to Manipur, her native place, for that petty thing. Three days have flown since she left him and Zamindar Rajan found it hard to reconcile with that bare fact.

Zamindar turned his eyes towards the huge *mango* tree that beautifully swayed its branches in the breeze in his garden. A pair of cuckoo perching on one of its branches and pleasantly swaying with the jolting tree caught his attention. The male bird pecked on the wings of its mate in a way of caressing and the female bird showed all cunning movements very characteristic of its sex and moved to a distance not far off from its mate!

Zamindar sighed a deep and hard breath. The sight of the happy pair made him feel

the absence of his wife Rama very much. " Wouldn't be better " he queried unto himself again, " if I had consented to her request."—After all Rama's request was not more than to allow her to visit the temple where a *Sanyasin* was halting for a few days. People talked much about the Godly powers of the young *Sanyasin* and amazed at the austerity and radiance that abounded his features. They talked about his simplicity and his sweet preachings which they said was the first of its kind they have ever heard. The whole village, except the Zamindar had seen and paid their homage to that God-sent man!

All these fell into the ears of the Zamindar too! But they excited him little! How could a simple *sanyasin* arouse curiosity in the youth who had been in pomp and pleasure and who had never seen anything except the wild fury of the animals in the forest during hunting and the kind, gentle and soothing affections of his beautiful wife Rama at other times. He would rather consider it beneath his dignity to go and see such *paradesis*. But Rama was a pious and religious woman and she had faith in what people told about the *sanyasin*. More than that she had a blind hope—why not it be her own brother? She had never seen her brother; but she had heard her father very often say that he was lost amidst a huge crowd of pilgrims during a *Kumba Mela*.

Rama's only request was to allow her at least to go to the temple and pay her homage to the *sanyasin*: but Zamindar refused her point blank and was adament despite Rama's repeated requests. When he returned home late in that night after *shikari*, he learnt with great fury that Rama had left for Manipur, to her father. For two or three days he was burning with wrath, but soon his anger subsided, as he began thinking of the events which separated his wife from him.

Days rolled on into weeks and Zamindar Rajan was slowly sinking in his health. Rarely did he move out of his bed and very often he lost himself into vacant day dreams. He sent word for the *sanyasin*: but the soldiers brought him the news that he had left the temple long ago. Each day he rose with a new hope that Rama would return back to him; but the very evening turned it into dupes. At times he used to think of going to Manipur himself to bring his wife back; but self-pride demanded its courtsey and prevented him from doing so. The ministers pitied the condition of the Zamindar and advised to go and stay for a few days in *Thachan Kadu*, a love and lovable spot in the western ghats where he could completely forget his worries and attain mental peace and happiness. At last the Zamindar agreed to their request and started for *Thachan Kadu*.

There he wandered all alone aimlessly in the hills and valleys with the *shikari* rifle hanging from his shoulder as a man who had no aim or purpose in his deeds. The morning dew-set grass, huge and phantasmagoric figures of the wild trees, the melodious songs of the twittering birds, and the white silvery clouds playing on the tops of the mountains—all these little attracted him. He very often looked vacantly, far far into the infinite space!

One day as he was wandering, he found this solitary man-made towering mansion amidst the thickets and hillocks. It surprised him very much. He sat in front of it and gazed at it vacantly, when a high pitched voice chanting the hymns flowed out of the building and filled in the valley. It took little time for him to realise that it was his own wife Rama's voice. How many times he had heard her chanting the same hymns! Next moment he rushed madly into the building and what he saw there, made his blood boil in him—A young *sanyasin* was sitting on a dais and his Rama was kneeling close to him and singing. His Rama, a Zamindarini to kneel before a *paradesi*!

His wife was doing a thing which he never wanted her to do. His vanity and self-pride took an upper-hand. He would rather be without a wife than to possess one who would stain his self-pride and respect. With a seething anger he mechanically took the shikari rifle hanging on his shoulder, held it towards his wife and pulled the trigger.

Next moment he heard a horrible penetrating shriek emanating from the parting soul; but it moved him little. Before the smoke could settle he walked out of the mansion and was walking day and night where all his legs carried him like a wild

tiger that had wreaked its vengeance against its bitter enemy. His mind was restless. He wandered about these hills and valleys for three days forgetting food and sleep; the penetrating shriek of his parting wife was always dinning into his ears. Wherever he went, the painful shriek reverberated, assumed a ghastly form and filled in his ears. It haunted his soul and body and drove panic into his terror-stricken heart and made him madly rush again to the white tower, only to see a few streaks of blood as the remains of his life partner. Zamindar Rajan wept and cried like a mad man and dashed his head against the wall and died like a mad dog.

Thus this lovable mountainous valley once witnessed the dire tragedy of an young couple. Long after this, a shepherd boy as he was returning home after grazing his cattle in the valleys, is said to have heard a melancholous shriek reverberating in the valley. It made him mad and he died after two days of delirious hectic fever.

But to-day even the innocent weeping child shuts its mouth when you tell the name of this haunted valley.

* * *

I was sweating awfully and now the train having passed the "haunted valley", I opened the windows; the cool breeze gushed forth and filled in the hot atmosphere inside; it rustled a few pages of the illustrated weekly which I was holding in my hands and when I looked down on it, the following lines were staring at me.

> " . . . that women are so simple
> To offer war when they should kneel for peace,
> Or seek for rule, supremacy and sway,
> When they are bound to serve, love and obey".

Really the poet has gone into the "frailties of women" and depicted it years ago. Centuries have passed, women have marched on high up in the path of progress, but the basic elements which made their mind have little changed. The figure of Latha, cold and frozen with fear is not an exception to the poet's description! I turned my eyes towards Latha, who was all this time looking at me. When my eyes met hers, with a hashful smile she looked out through the window on the metal lines that was closely following our track. In the shining metals running away into the distances her vague smile into space seemed to find its foundation. It seemed to be able to follow the lines to some point of permanence and reality—our *happy domestic married life.*

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# BOOK REVIEW

A Textbook of Gynaecology: K. M. Masani, M.D., (Lond.), F.R.C.S. (Eng.), F.I.C.S. Pp. xvi 639 with 261 photographs, microphotographs and illustrations. Popular Book Depot, Bombay, 1954. Price Rs. 17-8-0.

It is difficult for one who learnt his gynaecology from Wilfred Shaw to resist the temptation to compare the production of Dr. Masani's Textbook on Gynaecology with the magnificently produced monument which Shaw left to the world before his death. Truly a great triumph for British publishing, those beautiful drawings can never be equalled. It would be unfair to draw comparisons because standards vary and our quality of production and print have a long way to go to catch up with those of the West. Yet, in spite of these shortcomings Dr. Masani's pioneering attempt is most laudable. Moderate both in price and bulk, this is perhaps the first serious attempt to publish a book on gynaecology to meet Indian needs. Many of the photographs and microphotographs have reproduced well. Some of the line illustrations are good.

Dr. Masani has invited three of his distinguished colleagues to contribute. Dr. N. S. Vahia in a useful chapter has shown

that psychosexual disturbances merit an important place in a gynaecological book. Dr. E. J. Borges is to be congratulated on an up-to-date review of Malignant disease of the female genital tract. It is easy to be critical but perhaps more emphasis could have been laid on early diagnosis and less on describing heroic operative procedures such as pelvic exenterations. The omission of Electrolyte balance in the book is a serious oversight.

Dr. Masani delights us with his masterly account of ecctopic gestation illustrated by some good photographs.

With revision of the English, the incorporation of better quality medical illustrations, and the more selective use of those photographs which are instructive, this book will win a firm place among the better known medical textbooks. The chapter on gynaecological examination can be profitably lengthened.

If Sir Lakshmanaswamy Mudaliar's is the standard Indian textbook the medical student choses in obstetrics, I think Dr. Masani's book can claim to be its worthy equivalent is gynaecology.

V.S.

# MEDICAL MAGNETICS

The attraction between a Medical Student and a Nurse is uniform. It is inversely proportional to the distance between them, but directly proportional to sex appeal (S.A.), a property of the Nurse. Other factors include the absence of bright light and of other forces, e.g. Registrars, House Surgeon, etc., in which connection it should be noted that the attraction of a House Surgeon for a Nurse is infinitely large, and should a House Surgeon be present all other forces in the plane may be negleted.

The locus of a Medical Student is determined by a Sister and varies with time. If the locus remains constant for a given period the two components may unite in order to form a Couple. The necessary and sufficient conditions are :

(1) that they are inclined towards one another ;

(2) that they have a common arm (the arm being an essential factor in the preliminaries of Couple formation) ; and

(3) that they have at least two degrees of freedom.

The early stages of this process may occur in Ward, Theatre or O.P. Department, but further progress being difficult under these conditions an arrangement is made. This arrangement usually occurs after dark, and ensures that the Couple is isolated in its own plane, whereupon rotation occurs around a convenient axis until the Nurse and Medical Student are in reasonably close proximity. A complex variety of psychological factors determines for what length of time a stable equilibrium is maintained ; usually, however, this is of short duration being governed merely by the amount, if any, of S.A. (*vide supra*) required to touch the heart of the Medical Student.

Then follows . . . (*regret this portion cut owing to lack of space*—Editor) . . . until the equilibrium becomes unstable. The Medical Student is displaced towards his locus and in most cases within a given time the cycle of operations will recommence.

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